

CONTRACT NO. N68711-98-D-5713

CTO No. 0023

FINAL

PROJECT CLOSEOUT REPORT

Revision 0

July 8, 2003

NON-TIME-CRITICAL REMOVAL ACTION

SOLID WASTE MANAGEMENT UNIT 24

FORMER STATIONARY DEMILITARIZATION FURNACE AREA

NAVAL WEAPONS STATION SEAL BEACH

SEAL BEACH, CALIFORNIA

DCN: FWSD-RAC-03-3117



Southwest Division
Naval Facilities Engineering Command
Contracts Department
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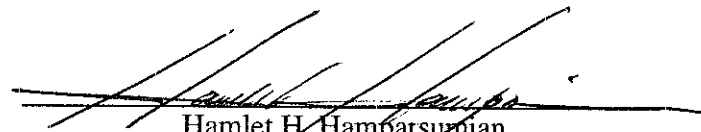
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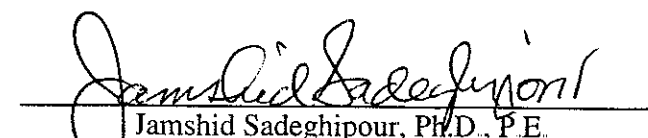
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EXECUTIVE SUMMARY

This Project Closeout Report describes the implementation of a Non-Time-Critical Removal Action (NTCRA) at Solid Waste Management Unit (SWMU) 24, also referred to as the former stationary demilitarization furnace facility (SDFF), at Naval Weapons Station (NAVWPNSTA) Seal Beach, Seal Beach, California. The Department of the Navy (DON) has determined upon review of the site's operational history and site-specific soil investigative data that this site contains elevated concentrations of lead in soil, thus requiring a response action. This decision is documented in the Action Memorandum/Removal Action Work Plan (AM/RAW) [Bechtel National, Inc. (BNI), 2002a]. The DON initiated the subject removal action to remediate the contaminated soils in order to minimize further migration of metals in surface soil at SWMU 24 and to reduce risk to ecological receptors from metals-impacted soil to acceptable levels. Because the vertical extent of the contaminated soil has been limited to the upper 2 to 4 feet below ground surface (bgs) and groundwater is approximately 21 feet bgs (CH2M Hill, 2002), groundwater is not impacted. Therefore, this removal action is focused on soil. It is recommended that no further action will be required, since the contaminated soil has been removed from this site.

Under the DON's directive, Foster Wheeler Environmental Corporation (FWENC), as General Contractor, conducted the removal action at the site under Remedial Action Contract Number N68711-98-D-5713. The removal action was conducted in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and National Oil and Hazardous Substances Pollution Contingency Plan (NCP) requirements.

SWMU 24 is a rectangular 0.69-acre area located near the center of NAVWPNSTA Seal Beach, approximately 330 feet south of Westminster Avenue, and east of Building 95 (Figures 1-1 and 1-2). The investigation area of SWMU 24 encompasses approximately 160 by 190 feet. SWMU 24, which is within Operable Unit (OU) 7, is bounded on the west by Building 95 and on the north, east, and south by agricultural fields (Figure 2-1).

Data from soil samples collected during the site investigation phase indicated that there were two areas of contamination within SWMU 24 that were approximately 90 feet by 70 feet and 70 feet by 70 feet. These two areas were designated as Area A and Area B, respectively. The vast majority of the contaminated soil was limited to the upper 1.5 feet of soil.

The former SDFF was located within SWMU 24 and was used primarily from 1985 to 1994 for the removal of explosive residue from expended munitions. After the former SDFF was decommissioned in 1998, the structures were demolished and removed and the site was graded.

The former SDFF was developed for processing small munitions items (such as, small arms ammunition, fuses, and cartridge-actuated devices) and destroying the small quantity of explosive or propellant that could not feasibly be recovered, while reclaiming the relatively large volume of valuable recyclable metals. Small arms munitions, the major workload for the former SDFF, did not meet the reactive hazardous classification because of their designation as Class C explosives (Kearney, 1989).

There are currently no buildings within SWMU 24, although Building 95 is approximately 50 feet to the west. Prior to the removal action, SWMU 24 was a flat area, with mostly bare soil and gravel with ruderal vegetation re-invading the site. Non-native grasses typical of other developed areas at NAVWPNSTA Seal Beach were growing there. The area offers limited habitat of poor quality (little vegetation) because of the gravel fill that covers much of the area. SWMU 24 is not frequented by station personnel.

The soil at SWMU 24 is primarily silty clay with a little sand. Groundwater is approximately 21 feet bgs (CH2M Hill, 2002).

The nature and extent of contamination at SWMU 24 was determined based on the results of the Phase II Focused Site Inspection (FSI) as summarized in the Final Engineering Evaluation/Cost Analysis (EE/CA) (BNI, 2002b). During the human health risk assessment performed as part of the Phase II FSI, soil analytical data were compared with station-wide upper limit background values (ULBVs) and residential Preliminary Remediation Goals (PRGs). The excess lifetime cancer risk (ELCR) and noncancer hazard quotient (HQ) for each chemical of potential concern (COPC) were then estimated. The 95 percent upper confidence limit (UCL) of the mean concentration of metals in soil at the site yielded a total ELCR of 1×10^{-8} and a noncancer hazard index (HI) of 1. Cadmium and lead were the primary contributors to the noncancer HI. The recommendation for a removal action presented in the Final EE/CA (BNI, 2002b) was not based on this low risk to human health.

Based on the ecological risk assessment conducted as part of the Phase II FSI, it was concluded that there was significant risk to ecological receptors from lead in soil. The ecological risk assessment includes consideration of the ecological receptors that live on or otherwise use SWMU 24 (mourning dove, ground squirrel, and American kestrel), receptors [raccoon (mammal, omnivore), American robin (bird, omnivore), and red fox (mammal, carnivore)], plants, soil invertebrates, and soil microbes. Although the red fox was relocated to an off-station location several years ago, it was used in the refined ecological risk assessment to represent mammalian carnivore species. The addition of supplemental ecological receptors provided for a broader evaluation of the ecosystem that may be at the site. The Phase II FSI determined that lead was the primary contributor to risk at this site. Because of the significant threats to ecological receptors at SWMU 24, the soil contamination warranted a removal action.

In order to evaluate and recommend an appropriate response action, the DON prepared an EE/CA for SWMU 24. The Final EE/CA (BNI, 2002b) identified the removal action objectives (RAOs) and analyzed several removal action alternatives to address the soil contamination at SWMU 24.

The RAOs for SWMU 24 were developed based on CERCLA, the NCP, and applicable or relevant and appropriate requirements (ARARs) identified by the DON in the Final EE/CA (BNI, 2002b). The primary ARARs for this removal action include the federal and state hazardous waste management regulations. Substantive state requirements of South Coast Air Quality Management District (SCAQMD) Rules 401(b)(1)(A), 403, 404, and 405 for fugitive dust emissions were also identified as ARARs. In addition, the substantive provisions of the California Fish and Game Code Section 3005(a) regarding the taking of birds and mammals were identified as an ARAR for the development of the RAOs for SWMU 24.

The RAOs for SWMU 24 were to minimize further migration of metals in surface soils at SWMU 24 and to reduce risk to ecological receptors from lead-impacted soil to acceptable levels. To help meet these RAOs, a site-specific target cleanup goal (TCG) was established for the areas where the removal action would occur.

Based on the ecological risk assessment and subsequent discussions with the regulatory agencies, the EE/CA recommended a TCG for lead in soil of 500 milligrams per kilogram (mg/kg). This value was determined to be protective of wildlife that may be present at the site, such as small birds and small mammals, and be protective of soil invertebrates and microbes that represent a source of food for the small birds and small mammals.

The removal action recommended for implementation by the DON for the contaminated soils at SWMU 24 and presented in the Final EE/CA (BNI, 2002b) and the Final AM/RAW (BNI, 2002a) was soil excavation with off-site disposal. This alternative consisted of excavating, transporting, and disposing of contaminated soil off site and backfilling the excavated areas with clean imported fill. The EE/CA recommended the excavation and off-site disposal alternative because it would reduce the risk posed by soils at SWMU 24, and would provide adequate protection to human and ecological receptors, as well as protection of the groundwater.

FWENC was directed by the DON to implement the recommended removal action at SWMU 24. A Final Project Work Plan (Work Plan) was prepared by FWENC on September 26, 2002 (FWENC, 2002a), which included the detailed description of various activities for the implementation and execution of the removal action. The Work Plan was reviewed by the regulatory agencies and approved on October 10, 2002.

FWENC conducted a number of preparatory activities at the site prior to excavation of the contaminated soil. A geophysical survey was performed on October 31, 2002, to assist in

locating and marking all underground utilities within the limits of excavation. A land survey was also performed on October 31, 2002, to mark the limits of excavation.

The excavation of the contaminated soils began on November 4, 2002, and was completed on November 22, 2002. Because the vast majority of the contaminated soil was limited to the upper 2 feet of soil, the top 2 feet of soil were excavated and removed first. Afterwards, two smaller areas within Area A (approximately 10 feet by 10 feet) and Area B (approximately 20 feet by 20 feet) were excavated an additional 1.5 feet, to a depth of 3.5 feet below original ground surface. Analytical results for samples collected at 2.5 feet bgs in those two areas, during the Phase II FSI, had indicated lead concentrations exceeding the TCG, requiring the removal of the soils in these two areas.

After excavating the soils, verification samples were collected from the floor and sidewalls of the excavations to ensure that the removal action satisfied the TCG of 500 mg/kg of lead. Soil with concentrations of lead above TCG was further excavated in 1-foot lifts. The areas in question were sampled again, and the process continued until the TCG was achieved. For the most part, the site was excavated an average of 2 feet bgs. The maximum depth of the excavation was 4 feet bgs. The deeper excavations were in the areas where the Phase II FSI had indicated localized deeper soil contamination. A total of 197 confirmation samples were collected and analyzed. Laboratory results of lead concentrations in the confirmation soil sample ranged from 2.4 mg/kg to 315 mg/kg.

Dust and emissions control was conducted on a regular basis during all earthmoving activities using generous amounts of water.

A total of 1,684 tons of contaminated soil was excavated and removed from the site. Excavated material was temporarily stockpiled on site. The stockpiled soil was sampled for waste classification purposes. Approximately 1,186 tons of contaminated soil were classified as non-hazardous waste, and 476 tons of contaminated soil were classified as California hazardous waste. None of the excavated soil was classified as Resource Conservation and Recovery Act (RCRA) hazardous waste.

Contaminated soil was loaded onto 25-ton capacity end-dump trucks or trailer trucks, and transported off site for disposal. Waste loading and hauling activities began on November 22, 2002, and were completed on November 26, 2002. A total of 73 end-dump trucks were loaded with contaminated soils and transported off site to Chemical Waste Management (CWM) disposal facility located in Kettleman City, California. CWM disposal facility in Kettleman City, California, is a permitted and CERCLA-approved disposal facility. All truck beds were completely covered with tarp prior to leaving the site. A non-hazardous or a hazardous waste manifest was filled out for each load, signed by the DON, and provided to the transporter for shipment.

The excavated areas were backfilled and graded using soil from the raised surrounding area immediately around the excavations. The site was graded, smooth-finished, and compacted by heavy equipment tracking and walking over the backfilled areas. SWMU 24 is located in an area where fire prevention maintenance, such as constant mowing, is required, and it is located immediately adjacent to an agricultural land. Therefore, the DON elected to let the surrounding plants naturally take over the remediated area to simplify the management of vegetation at this site.

Based on the results of verification samples collected following excavation, lead-impacted soils within the site were removed to concentrations well below the established TCG level, thus achieving the RAOs developed in the Final EE/CA (BNI, 2002b). The removal action at SWMU 24 is deemed complete, and no further action is recommended.

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ABBREVIATIONS AND ACRONYMS

°C	degrees Celsius
µg/L	micrograms per liter
µg/m ³	micrograms per cubic meter
AM/RAW	Action Memorandum/Removal Action Work Plan
APCL	Applied Physics and Chemistry Laboratory
ARAR	applicable or relevant and appropriate requirement
bgs	below ground surface
BNI	Bechtel National, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
COPC	chemical of potential concern
CWM	Chemical Waste Management
DON	Department of the Navy
DOT	Department of Transportation
DPM	Deputy Program Manager
DTSC	Department of Toxic Substances Control
EE/CA	Engineering Evaluation/Cost Analysis
ELCR	excess lifetime cancer risk
EO	Executive Order
EPA	U.S. Environmental Protection Agency
FCR	Field Change Request
FD	field duplicate
FSI	Focused Site Inspection
FWENC	Foster Wheeler Environmental Corporation
HI	hazard index
HQ	hazard quotient
IR	Installation Restoration
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
NA	not analyzed
NAVWPNSIA	Naval Weapons Station

ABBREVIATIONS AND ACRONYMS
(Continued)

NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NISZ	Newport-Inglewood structural zone
NTCRA	Non-Time-Critical Removal Action
OU	Operable Unit
PPE	personal protective equipment
PRG	Preliminary Remediation Goal
PVC	polyvinyl
QC	quality control
RAB	Restoration Advisory Board
RAO	removal action objective
RCRA	Resource, Conservation and Recovery Act
RFA	RCRA Facility Assessment
ROICC	Resident Officer in Charge of Construction
RPM	Remedial Project Manager
RWQCB	Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SDFF	stationary demilitarization furnace facility
SHSP	Site-Specific Health and Safety Plan
SHSS	Site Health and Safety Specialist
STLC	Soluble Threshold Limit Concentration
SWDIV	Southwest Division
SWMU	Solid Waste Management Unit
TAL	Target Analyte Listed
TCG	target cleanup goal
TCLP	Toxicity Characteristic Leaching Procedure
TSDF	treatment, storage, and disposal facility
TTLC	Total Threshold Limit Concentration
UCL	upper confidence limit
ULBV	upper limit background value
WET	Waste Extraction Test

1.0 INTRODUCTION

This Project Closeout Report describes the implementation of a Non-Time-Critical Removal Action (NTCRA) for Solid Waste Management Unit (SWMU) 24, former stationary demilitarization furnace facility (SDFF) at Naval Weapons Station (NAVWPNSTA) Seal Beach, located in Seal Beach, California (Figures 1-1 and 1-2). This removal action project was authorized by the Department of the Navy (DON), Naval Facilities Engineering Command, Southwest Division (SWDIV), under Contract Task Order No. 0023 of the Remedial Action Contract Program, Contract No. N68711-98-D-5713. The main purpose of the Project Closeout Report is to document the SWMU 24 NTCRA, specifically: 1) the site conditions prior to the action, 2) the chronology and main phases leading to the removal action, 3) the implementation of various stages of the NTCRA, 4) the costs, and 5) the effectiveness of the NTCRA in achieving the removal action objectives (RAOs) established for SWMU 24.

The DON, SWDIV, directed this NTCRA in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The DON, with state regulatory oversight, has been the lead agency for the removal action at this site. The California Department of Toxic Substances Control (DTSC) and Regional Water Quality Control Board (RWQCB), Santa Ana Region, have been providing state oversight.

This NTCRA has been conducted pursuant to the CERCLA and the NCP under the delegated authority of the Office of the President of the United States by Executive Order (EO) 12580. This order provides the DON with the authorization to conduct and finance removal actions. SWDIV is the administering entity for the DON's CERCLA program at NAVWPNSTA Seal Beach and, as such, manages the activities specific to development and execution of the recommended removal alternative. Under the DON's directives, Foster Wheeler Environmental Corporation (FWENC), as General Contractor, conducted the NTCRA at SWMU 24.

1.1 PROJECT OBJECTIVE

The DON had determined (upon review of the SWMU 24 operational history and site-specific soil investigative data) that the site contained elevated concentrations of lead in soil, thus requiring a response action. The DON initiated the subject removal action to remediate the contaminated soils in order to eliminate exposure pathways for contaminated soil to human and ecological receptors and to mitigate future impacts to groundwater and control off-site migration of the soil contamination. Based on the Phase II Focused Site Inspection (FSI), the vertical extent of the contaminated soil has been limited to the upper 2 to 4 feet below ground surface (bgs). The Phase II FSI has also determined that the site's underlying groundwater, which is at approximately 21 feet bgs (CH2M Hill, 2002), has not been impacted. Therefore, this removal

action is focused on soil. The DON developed an Action Memorandum/Removal Action Work Plan (AM/RAW) [Bechtel National, Inc. (BNI), 2002a], in order to document the need for a NTCRA. The AM/RAW (BNI, 2002a) identified the proposed action and explained the rationale for the removal. The NTCRA at SWMU 24 was conducted in accordance with the recommended alternative in the AM/RAW (BNI, 2002a). The intent of the NTCRA was to prepare the site for future consideration for "No Further Action" status. The implementation of the NTCRA at SWMU 24 commenced on October 29, 2002, and was completed on December 5, 2002. This Project Closeout Report documents the field activities.

The scope of work performed at SWMU 24 during the project included topographic survey, a pre-excavation and post-excavation land survey, excavation of the contaminated soils, stockpiling of the waste soil and classification of the waste, off-site waste disposal, and site restoration.

1.2 REPORT ORGANIZATION

This Project Closeout Report is divided into nine sections. Section 1.0 provides an introduction, as well as an overview of the project objective, scope of work, and report organization. Section 2.0 provides a description of SWMU 24 and summarizes the site's history and background information, summarizes field data from previous investigations, and briefly discusses risks to human health and the environment associated with contaminants at the site. Section 3.0 discusses the previous investigations conducted at the site, the applicable or relevant and appropriate requirements (ARARs), and the RAOs. Details of each aspect of the project field activities are described in Section 4.0. Section 5.0 provides a summary of the costs associated with this removal action. A brief discussion of public participation and involvement is provided in Section 6.0. Section 7.0 discusses the effectiveness of the NTCRA. Section 8.0 provides a brief discussion of the No Further Action recommendation for SWMU 24. References are included in Section 9.0. Laboratory analytical results for verification samples are included in Appendix A. Appendix B contains Field Change Requests (FCRs). A photographic log is included in Appendix C. Tables and figures are also included to supplement information in this report.

2.0 SITE CONDITIONS

This section describes the facility and site locations and provides a description of the past history of operations at SWMU 24. This section also summarizes field data from previous investigations and includes a brief description of the nature and extent of the contamination, along with a discussion of the risk to human health and the environment. The information provided in this section has been extracted from various sources, including the Final Engineering Evaluation/Cost Analysis (EE/CA) for SWMU 24 (BNI, 2002b) and the Final AM/RAW (BNI, 2002a).

2.1 FACILITY LOCATION AND BACKGROUND

NAVWPNSTA Seal Beach is located about 30 miles south of the Los Angeles urban center. NAVWPNSTA Seal Beach consists of approximately 5,000 acres of land along the Pacific Coast within the city of Seal Beach in Orange County, California (Figure 1-1). NAVWPNSTA Seal Beach is bordered on the southwest by Anaheim Bay, on the north by Interstate 405 (San Diego Freeway), on the east by Bolsa Chica Road, on the west by Seal Beach Boulevard, and on the southeast by a flood control channel. Originally commissioned in 1944, NAVWPNSTA Seal Beach is part of the Navy Region Southwest, and its major claimant is the Commander United States Pacific Fleet. This station provides fleet combatants with ready-for-use ordnance. Because of its geographic location, the station serves as a supply point for the operating DON and Marine Corps forces in the southern California region. Figure 1-2 shows a map of NAVWPNSTA Seal Beach, including the location of SWMU 24.

2.1.1 Site Location, Area, and Structures

The extent of SWMU 24 consists of a rectangular area, approximately 0.69 acre, located near the center of NAVWPNSTA Seal Beach, approximately 330 feet south of Westminster Avenue, and east of Building 95 (Figures 1-2 and 2-1). The investigation area of SWMU 24 encompasses approximately 160 by 190 feet. SWMU 24, which is within Operable Unit (OU) 7, is bounded on the west by Building 95 and on the north, east, and south by agricultural fields. NAVWPNSTA Seal Beach lies within Township 5 South and Ranges 11 and 12 West, using the San Bernardino Baseline and Meridian. The latitude and longitude of SWMU 24 are 33°45'20" north and 118°4'3" west, respectively (United States Geological Survey, 1965). The extent of contaminated soils, which required excavation at SWMU 24, was confined to two distinct areas with the highest lead concentrations. The approximate limits of these two excavation areas (Area A and Area B) are delineated based on the 500 milligrams per kilogram (mg/kg) lead iso-concentration lines provided in the Final EE/CA (BNI, 2002b). The largest area (Area A) is approximately 70 feet wide by 90 feet long and is located approximately 40 feet east of Building 95 (Figure 2-1). The smaller lead-contaminated area (Area B) is approximately 70 feet

by 70 feet and is located approximately 120 feet east of Building 95 (Figure 2-1) There are no structures at the site.

2.2 PAST HISTORY OF OPERATIONS AND POLLUTION GENERATING ACTIVITIES AT THE SITE

SWMU 24 is the area where the former SDFF was located. The SDFF was used primarily from 1985 to 1994 for the removal of explosive residue from expended munitions. After the former SDFF was decommissioned in 1998, the structures were demolished and removed, the areas known to contain residual quantities of hazardous materials were decontaminated, and the site was graded.

The former SDFF was developed for processing small munitions items (such as, small arms ammunition, fuses, and cartridge-actuated devices) and destroying the small quantity of explosive or propellant that could not feasibly be recovered, while reclaiming the relatively large volume of valuable recyclable metals (Kearney, 1989)

During operation of the facility, the waste (kiln dust and sludge) was temporarily stored in 55-gallon, Department of Transportation (DOT)-approved drums at the former SDFF prior to disposal at a permitted off-station facility. The processing of expended munitions generated waste material containing hazardous concentrations of metals; therefore, it was disposed as a hazardous waste when removed from the facility. On a quarterly basis, a maximum of approximately 3,000 pounds of hazardous waste was stored at the facility (CH2M Hill, 2002).

SWMU 24 was a flat area, which was mostly bare soil and gravel with ruderal vegetation that had re-invaded the site. Non-native grasses, typical of other developed areas at NAVWPNSIA Seal Beach, were also growing there. The area offered limited habitat of poor quality because of the gravel fill that covered much of the area.

2.3 GEOLOGIC SETTING

Most of NAVWPNSIA Seal Beach lies on flat, alluvial deposits that slope evenly from approximately 20 feet above mean sea level in the northeastern part of the facility to mean sea level in the tidal flats in the southwestern portion of the base.

Bedrock in the vicinity of the base is a thick sequence of Tertiary and Quaternary sedimentary rocks deposited on a basement of pre-Tertiary metamorphic and crystalline rocks. Tertiary rocks range in age from Oligocene to Pliocene and include sandstone, siltstone, shale, and mudstone; they are almost exclusively of marine origin (CH2M Hill, 2002).

NAVWPNSIA Seal Beach is located adjacent to the Pacific Ocean at the seaward edge of the Orange County Coastal Plain in the northwest corner of Orange County, California. The northwest-trending, Newport-Inglewood structural zone (NISZ) underlies the southwestern half

of NAVWPNSTA Seal Beach. NISZ consists of a complex set of faults and folds that extend from Newport Beach, approximately 10 miles southeast of NAVWPNSTA Seal Beach, to Beverly Hills at the base of the Santa Monica Mountains, approximately 30 miles northwest of the station. Uplift along the NISZ has produced a line of low coastal hills and mesas near the southern end, including Landing Hill along the western edge of NAVWPNSTA Seal Beach. Adjacent to Landing Hill on the east is Sunset Gap, a wetland comprising of coastal salt marsh and tidal mudflats (BNI, 2002b).

NAVWPNSTA Seal Beach soils typically contain abundant clay and silt and are poorly drained. Six soil types (Alo clay, beaches, Bolsa silt loam, Bolsa silt clay loam, Myford sandy loam, and tidal flats) have been identified at the station (Soil Conservation Service, 1978). The soil at SWMU 24 is primarily silty clay with a little sand. Groundwater is expected to be approximately 21 feet bgs (CH2M Hill, 2002).

2.4 CHEMICAL CHARACTERISTICS

The nature and extent of contamination at SWMU 24 were based on the results of the Phase II FSI, (CH2M Hill, 2002) site decommission sampling, and Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) summarized in the Final EE/CA (BNI, 2002b).

2.4.1 Chemicals of Concern

The sampling results from site decommission sampling showed that 13 of the 16 sampling grids contained at least one constituent that exceeded the respective station-wide upper limit background values (ULBVs) for metals in soil at NAVWPNSTA Seal Beach. Lead was reported in excess of the ULBV in 12 of the 16 grids sampled at concentrations of up to 1,200 mg/kg. Copper was reported in 5 of the 16 samples at concentrations exceeding the ULBV. Cadmium was reported in four of the samples at concentrations exceeding the ULBV. Selenium and mercury were each reported in one sample at a concentration exceeding their respective ULBV (FWENC, 1999).

According to the Phase II FSI (CH2M Hill, 2002), seven metals (cadmium, copper, lead, mercury, nickel, selenium, and zinc) were reported at concentrations above the ULBVs. Lead and copper were the most frequently reported metals above ULBVs. Most of the metals above ULBVs were predominantly reported in surface soil samples.

2.4.2 Nature and Extent of Contamination

The source and nature of contamination at SWMU 24 are associated with activities that took place at the former SDFF. Operation and maintenance activities at the former SDFF may have resulted in the release of metals-contaminated dust and sludge into the environment and deposition onto the ground within SWMU 24. Lead and copper were the most frequently reported metals within SWMU 24, reported in 30 percent and 20 percent of soil samples,

respectively. The locations with the highest concentrations of the other metals generally corresponded to the locations with the highest concentrations of lead (CH2M Hill, 2002).

Lead was the most commonly reported metal in soil samples collected during the Phase II FSI (CH2M Hill, 2002) at SWMU 24. Therefore, lead distribution profiles for surface soil samples from 0.5 to 1.0 foot bgs, 2.0 to 2.5 feet bgs, and 4.0 to 4.5 feet bgs were developed (Figures 4-1 and 4-2). Combined, these two figures provided an approximation of the vertical extent of lead in soil and illustrated that most of the elevated lead concentrations were reported in surface soil samples. There are two distinct areas of lead contamination (concentrations above ULBVs) at SWMU 24. One area is located along the northern edge (around Sample Location 2) and the other area is located in the southeastern portion of SWMU 24 (around Sample Location 24). Most of the lead concentrations, which exceeded the target cleanup goal (TCG) of 500 mg/kg and ranged up to 4,060 mg/kg were located within the site's shallow surface soils. Lead concentrations decreased sharply with depth.

2.5 SUMMARY OF FIELD DATA AND RISKS TO HUMAN HEALTH AND/OR THE ENVIRONMENT

Human health and ecological risk screening for soils at SWMU 24 was performed as part of the Phase II FSI (CH2M Hill, 2002). The evaluated chemicals of potential concern (COPCs) were metals, including cadmium, copper, lead, mercury, nickel, selenium, and zinc. The following subsections provide a brief discussion of the human health risk and ecological risk assessments.

2.5.1 Human Health Risk Assessment Summary

The human health risk assessment that was performed as part of the Phase II FSI (CH2M Hill, 2002) compared soil analytical data with station-wide ULBVs and residential Preliminary Remediation Goals (PRGs). The excess lifetime cancer risk (ELCR) and noncancer hazard quotient (HQ) for each COPC were then estimated. The 95 percent upper confidence limit (UCL) of the mean concentration of metals in soil at the site yielded a total ELCR of 1×10^{-8} and a noncancer hazard index (HI) of 1. Cadmium and lead were the primary contributors to the noncancer HI. The human health risk screening performed during the Phase II FSI (CH2M Hill, 2002) concluded that there were minimal risks from metals at the site. Therefore, the recommendation for a removal action was not based on this low risk to human health.

2.5.2 Environmental Risk Assessment Summary

An ecological risk assessment was performed for contaminants present in soil at SWMU 24 (CH2M Hill, 2002). The ecological risk assessment includes consideration of the ecological receptors that live on or otherwise use SWMU 24 (mourning dove, ground squirrel, and American kestrel), additional ecological receptors [raccoon (mammal, omnivore), American robin (bird, omnivore), and red fox (mammal, carnivore)], plants, soil invertebrates, and soil microbes. Although the red fox was relocated to an off-station location several years ago, it was

used in the refined ecological risk assessment to represent mammalian carnivore species. The addition of supplemental ecological receptors provided for a broader evaluation of the ecosystem that may be at the site. Based on the ecological risk screening, the Phase II FSI determined that the metals in the soil presented ecologically significant risks to terrestrial receptors. Safe ecological PRGs for most receptors were exceeded by the maximum concentrations of these metals and by the arithmetic mean concentrations of lead. The Phase II FSI determined that lead was the primary contributor to risk at this site, and the risk assessment indicated that lead in soil presented an unacceptable ecological risk. Conditions at the site meet the following NCP requirement for a removal action [40 Code of Federal Regulations (CFR) 300.415(b)(2)]:

- Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants

3.0 MAIN PHASES LEADING TO REMOVAL ACTION

3.1 PREVIOUS INVESTIGATIONS

This section presents a brief chronology of the investigative phases that have led to the decision to conduct a removal action at SWMU 24.

NAVWPNSTA Seal Beach and the DON have been actively engaged in the Installation Restoration (IR) Program since the 1980s. However, detailed investigation at SWMU 24 under the IR Program began recently. There were no previous removal actions taken at SWMU 24. The following summarizes the results of previous investigations conducted at SWMU 24.

- In 1988, A. T. Kearney performed an RFA to identify and evaluate SWMUs and other areas of concern at NAVWPNSTA Seal Beach. The RFA Report (Kearney, 1989) summarized SDFP activities, the amount and type of waste generated (which were approximately eight 55-gallon drums of lead/water sludge per year, and two 55-gallon drums of particulate exhaust from the cyclone per year, and twenty 55-gallon drums of particulate exhaust from the baghouse per year), release history (there were no known releases from this unit), and future release potential. Potential for releases to soil, groundwater, surface water, air, and subsurface gas was determined to be low because of the unit's operational practices, electron capture detectors, and secondary containment measures. Suggestions for further action included continued monitoring of the SDFP according to appropriate RCRA regulatory requirements and implementation of any necessary further actions (Kearney, 1989).
- In 1998, FWENC decommissioned the SDFP at SWMU 24. Following demolition of the facility, at the DON's request, FWENC collected soil samples from the surface soil in and around the areas where structures had been located. One sample was collected from a random location within each of the 16 sampling grids at a depth of 3 inches bgs (FWENC, 1999). The sampling results showed that 13 of the 16 sampling grids contained at least one constituent that exceeded the respective station-wide ULBV for metals in soil at NAVWPNSTA Seal Beach. Lead was reported in excess of the ULBV in 12 of the 16 grids sampled at concentrations of up to 1,200 mg/kg. Copper was reported in 5 of the 16 samples at concentrations exceeding the ULBV. Cadmium was reported in 4 samples at concentrations exceeding the ULBV. Selenium and mercury were each reported in one sample at a concentration exceeding their respective ULBVs (FWENC, 1999).
- In 2000, CH2M Hill conducted a Phase II FSI at SWMU 24. The objective of the Phase II FSI was to assess the extent of metals for screening ecological and human health risks. As a result of the risk assessment study, a removal action was recommended in the Phase II FSI for SWMU 24. Significant risks to terrestrial ecological receptors from exposure to soil were the primary basis for this recommendation.

- The DON issued a Final EE/CA prepared by BNI on June 19, 2002, followed by a Final AM/RAW prepared by BNI in August 2002 summarizing the results of the EE/CA.
- Upon regulatory concurrence of the EE/CA and AM/RAW, and providing the opportunity for public input to the cleanup process, the DON was authorized in August 2002 to conduct the removal action at SWMU 24. The DON tasked FWENC to implement the recommended removal action at the site.
- FWENC prepared a Work Plan for the removal action that was reviewed by the regulatory agencies and the public. The Final Project Work Plan was finalized and received regulatory agencies' concurrence in October 2002. The Work Plan was also presented to the Restoration Advisory Board (RAB) at NAVWPNSTA Seal Beach.

3.2 SIGNIFICANT APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

The remedial alternative selected for SWMU 24 was intended to attain a certain level of protection for human health and the environment. The level of protection was based on potential ARARs. The NCP requires on-site CERCLA removal actions to identify and comply with federal and state ARARs to the extent feasible, considering the urgency of the situation. In accordance with the NCP requirements, the ARARs for the planned removal action at SWMU 24 have been identified and documented in the Final EE/CA (BNI, 2002b).

Several chemical-specific, location-specific, and action-specific ARARs were identified that affected the development of RAOs and TCGs for the site. The primary ARARs for this removal action include the federal and state hazardous waste management regulations. Based on the knowledge of the nature and concentrations of contaminants at SWMU 24, the impacted soil will not be considered a listed hazardous waste and will not be ignitable, corrosive, or reactive. Concentrations of the lead in some soil samples, however, indicate that the soil may be classified as toxic and, therefore, possibly a RCRA hazardous waste. A RCRA classification determination must be made using the Toxicity Characteristic Leaching Procedure (TCLP).

California environmental health standards for the management of hazardous waste were approved by the U.S. Environmental Protection Agency (EPA) as a component of the federally authorized California RCRA program. Therefore, soils excavated from SWMU 24 were required to be evaluated for hazardous waste characteristics based on the Total Threshold Limit Concentration (TILC) and Soluble Threshold Limit Concentration (STLC). Both the TCLP and California Waste Extraction Test (WET) were required to be used to classify the soil at this site. Soil not classified as RCRA hazardous or non-RCRA hazardous would be classified as non-hazardous.

Excavation activities were required to be performed in accordance with certain regulatory requirements. Fugitive dust emissions are expected from the soil excavation and stockpiling operations during the removal action. Substantive state requirements of South Coast Air Quality

Management District (SCAQMD) Rules 401(b)(1)(A), 403, 404, and 405 for fugitive dust emissions were identified as ARARs.

In addition, the substantive provisions of the following requirement were identified as an ARAR for the development of the RAOs for SWMU 24:

- California Fish and Game Code Section 3005(a) regarding the taking of birds and mammals

3.3 OBJECTIVES OF THE REMOVAL ACTION

The following RAOs were developed for SWMU 24 based on CERCLA, NCP, the risk assessment in the Phase II FSI, and ARARs:

- Minimize further migration of metals in surface soil at SWMU 24.
- Reduce risk to ecological receptors from metals-impacted soil to acceptable levels.

PRGs for metals in soil were developed from predictive exposure scenarios for the ecological receptors. Based on the ecological assessment, lead was the only metal that presented an unacceptable ecological risk. A cleanup goal for lead in soil at 500 mg/kg was established. This value is considered protective of wildlife that may be present at the site, such as small birds and mammals, and protective of soil invertebrates and microbes that represent a source of food for the small birds and mammals.

3.4 SELECTED REMEDIAL TECHNOLOGY

The removal action recommended for implementation by the DON for the contaminated soils at SWMU 24 and presented in the EE/CA and AM/RAP was excavation and off-site disposal. This alternative consisted of excavating, transporting, and disposing contaminated soil off site and backfilling the excavation with clean imported fill. This alternative was recommended because it was determined to be the most effective in achieving the RAOs. While at the same time, this alternative would best meet the NCP criteria of overall protectiveness of human health; compliance with ARARs; long-term effectiveness; reduction of mobility, toxicity, or volume through treatment; short-term effectiveness; implementability; cost; and state and community acceptance. Implementation of the recommended removal action alternative required that waste soil and debris classified as RCRA hazardous, non-RCRA California hazardous, or non-hazardous waste be transported to a CERCLA-approved, licensed treatment, storage, and disposal facility (TSDF) for disposal.

This removal action was implemented under the direction of the DON in cooperation with DTSC and the RWQCB, Santa Ana Region.

4.0 ACTUAL WORK PERFORMED

This section provides a detailed description of the specific field activities for implementation of the removal action. With certain exceptions and deviations, these activities followed the planned procedures discussed in the Work Plan (FWENC, 2002a). The field changes are described and listed in detail in Section 4.14. FWENC mobilized to SWMU 24 on October 29, 2002. The excavation of the impacted soil was initiated on November 4, 2002, and was completed by November 22, 2002. Upon completion of the removal activities, FWENC removed and demobilized all equipment and personnel from the site by December 5, 2002. The transportation and disposal of the impacted soil commenced on November 22, 2002, after evaluation of the initial stockpile analytical data. Loading operations and hauling of all contaminated material off the site was completed on December 4, 2002.

The following is a list of the major activities performed during the SWMU 24 removal action:

- Preparatory activities including procurement and notifications
- Geophysical survey to identify the location of underground utilities
- Installation of temporary security fencing around the site
- Mobilization and setup of an on-site office trailer, portable sanitary facilities, and hookups for electricity
- Mobilization of construction equipment and construction labor
- Conducting personal air sampling
- Installation of pipes and fittings and hookup to the fire hydrant to provide water to the site
- Excavation of contaminated soil
- On-site stockpiling of excavated material
- Sampling, analysis, and classification of excavated stockpiled waste material prior to disposal
- Loading, transportation, and disposal of contaminated soils
- Post-excavation verification sampling and laboratory analysis
- Site grading and restoration
- Demobilization

The actual work performed and the above-listed activities are described in Subsections 4.1 through 4.12.

4.1 SUBCONTRACTING/PROCUREMENT

All field activities were performed under the direct supervision of FWENC with assistance from specialty subcontractors. The procurement of the subcontractors and required services and materials were performed consistent with the terms of the contract and applicable Federal Acquisition Regulations.

Several specialty subcontractors were procured to assist in specific aspects of the removal activities. These subcontractors included a geophysical survey contractor, civil survey contractor, hazardous waste hauler/transporter, TSDF, and analytical laboratories.

FWENC conducted earthmoving activities including soil excavation, temporary stockpiling of the excavated material, and grading of the site. The hazardous waste hauler/transporter was Denbeste Transportation Inc., which was responsible for the transportation of the impacted soils and waste material to the Chemical Waste Management Inc disposal facility located in Kettleman City, California.

Applied Physics and Chemistry Laboratory (APCL) located in Chino, California, performed all of the required chemical analyses on the soil samples for waste characterization, verification, and disposal classification. Health Science Associates Environmental Laboratory located in Los Alamitos, California, performed laboratory analysis for lead on samples collected from personal air sampling.

Ron Martin and Associates of San Clemente, California, was responsible for land surveying. Shepherd Machinery Co. and Hertz Equipment Rental, provided construction equipment rental. Equipment operators and laborers were hired on an as-needed basis. Vendor procurement involved leasing an office trailer, portable toilets, and health and safety monitoring equipment. Other miscellaneous equipment, such as sampling and testing equipment, construction tools, polyethylene liners, sand bags, and so forth were procured on an as-needed basis.

4.2 NOTIFICATIONS

The Resident Officer in Charge of Construction (ROICC) and the Remedial Project Manager (RPM) were contacted by FWENC to inquire about the necessary permits for the activities, such as excavation and stockpiling of the soils. No NAVWPNSTA permits were required for these activities. However, prior to the removal activities, FWENC notified the ROICC and the appropriate NAVWPNSTA departments or personnel about the nature of the anticipated work. Underground Service Alert was also notified to obtain utility clearance prior to excavation activities.

A grading permit was not required as the federal government is exempt under county ordinance, provided that grading is supervised and inspected by a registered professional engineer.

No permits for temporary stockpiling of hazardous waste were necessary. The excavated soils and waste material were not stored on site for greater than 90 days.

4.3 GEOPHYSICAL SURVEY

On October 31, 2002, under contract to FWENC, ULS Services, Inc. (Pocatello, Idaho) performed a geophysical survey at SWMU 24. The geophysical survey was performed to assist in marking the locations of any known or unknown underground utilities at the site. Electromagnetic line location equipment was used. The locations of the utility alignments were painted and staked on the ground surface, and mapped on the site plan. Several utility lines were detected and identified by the geophysical survey including electric, sanitary sewer, and undifferentiated utility alignments. The results of the geophysical survey were compared with the available as-built drawings obtained from the ROICC's office and the NAVWPNSTA Seal Beach Public Works Center to determine if any undocumented utilities or other features existed in the surveyed area. Appropriately colored paints were used to mark the identified utilities within the vicinity of the planned excavation areas. Caution was used when excavating in areas at or around the marked utilities.

4.4 PREPARATORY ACTIVITIES AND MOBILIZATION

A kickoff meeting was held on October 22, 2002, between the NAVWPNSTA Seal Beach IR Program Coordinator, ROICC, FWENC Project Manager, Site Superintendent, and Health and Safety Manager. The meeting included discussion and understanding of Contractor Quality Control (QC) details; administration of the on-site work; and coordination of the construction management and submittal of necessary reports, such as daily production and QC reports.

Upon receipt of authorization, field personnel and temporary facilities were mobilized to the site. Mobilization activities included site preparation, movement of equipment and materials to the site, and training and site orientation of field personnel. Prior to mobilization, the appropriate DON personnel, including the RPM, NAVWPNSTA IR Program Manager, and the ROICC, were notified about the planned schedule for mobilization and soil removal activities. A list of the field personnel and their respective personal data were delivered to the ROICC to arrange for authorized entry and badges. In order to obtain station passes for site vehicles, a list of the vehicles along with the required documentation, including insurance records, were also provided to the ROICC.

Mobilization of temporary facilities also included the establishment of a staging area to support the project activities. The support facilities, which were installed in the staging area, included portable restroom facilities, personnel decontamination area, eyewash station, and a hand wash sink. The support facilities were located at the northwest corner of the site, which included a temporary office and storage trailer, portable restrooms, and a trash bin. Once the trailer was transferred to the site, utility connections were made to a portable power generator for power.

Equipment mobilization was initiated with site preparation activities. In order to minimize storage requirements, equipment and materials were mobilized to the site on an as-needed basis.

All construction equipment was delivered to the site in a clean condition. All equipment was decontaminated prior to leaving the exclusion zone.

4.5 MONITORING AND EMISSIONS CONTROL

This section describes the methods that were used to quantify airborne contaminants, if any, and mitigate exposure to site personnel. This section also describes the methods used to monitor, control, and minimize the off-site migration of airborne contaminants. Monitoring included monitoring the workers during site activities. Identification and quantification of airborne contaminants during the removal activities at SWMU 24 were an essential component of the Site-Specific Health and Safety Plan (SHSP) requirements. Potential airborne contaminants were quantified by personal air sampling using a Gilian Gilair air sampling pump with a polyvinyl chloride (PVC) filter cassette. Two PVC filter cassettes, with a chain-of-custody, were delivered to Health Science Associates Environmental Laboratory for lead analysis. One of these was used as a blank, the other was used to collect a personal air sample. The laboratory analytical results from this sampling for lead were reviewed and compared with the California Occupational Safety and Health Administration limit of 30 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) to determine whether additional precautions were required. The results of the sampling were less than $2 \mu\text{g}/\text{m}^3$.

Dust control was implemented on a continuous and regular basis for the duration of the project. Each workday, prior to excavation or earthwork activities, water was sprayed over the planned excavation areas to minimize the amount of dust generated. A hose connected to a fire hydrant was used for water application in excavation areas.

In addition, 10-mil PVC liner sheets were placed over the excavated and stockpiled waste material in order to control dust emissions. Moreover, all trucks hauling waste off site were covered with plastic tarps before departing the site.

4.6 EXCAVATION OF IMPACTED SOIL

Soil data collected during the Phase II FSI had indicated that the area of contamination was limited to two areas (Areas A and B as indicated on Figures 4-1 and 4-2) totaling approximately 11,000 square feet. The data also indicated that the vast majority of the contaminated soil was limited to the upper 1.5 feet of soil, and that the maximum depth of the excavation was expected to be approximately 3.5 feet bgs.

Excavation activities began on November 4, 2002. Prior to excavation, the limits of the excavation were surveyed and marked. The two areas of the site (Areas A and B) were then divided into 100 equal 10-foot by 10-foot square grids (Figures 4-3 and 4-4). The grid nodes that

were established in the Work Plan (FWENC, 2002a) were identified, measured, and staked at the site and used for excavation and verification sampling purposes.

A CAT 426B backhoe was initially used to excavate the soils. Afterwards, a CAT 325 excavator was mobilized to conduct the excavation. The excavation was conducted in two stages. Area B was excavated first, followed by Area A. Excavation activities began in Area B by removing the top 2 feet of soil, which had lead concentrations greater than 1,500 mg/kg in soils within Grids C3, C4, D3, and D4. The soil excavated from the above grids was stockpiled separately in a stockpile designated as "D" for soil with lead concentrations of greater than 1,500 mg/kg. The soil from the remaining Area B grids with lead concentrations of less than 1,500 mg/kg was stockpiled in a separate stockpile designated as "C". The reason for stockpiling the soils separately was to segregate soil that could potentially be classified as RCRA hazardous waste from soil that could be classified as non-RCRA hazardous waste, thus reducing the transportation and disposal costs. In Area B, Grids F3, F4, G3, and G4 were excavated an additional 1.5 feet to 3.5 feet bgs. The IR investigations had indicated a lead concentration of 630 mg/kg in this area at a depth of 2.5 feet bgs. On November 5, 2002, Area B was completely excavated to planned limits.

Excavation of Area A began on November 5, 2002, starting with excavation of soils with lead concentrations of greater than 1,500 mg/kg. Similar to the stockpiles for Area B, the soil excavated from Area A was stockpiled separately in stockpiles designated as "C" and "D" to distinguish the soils that could be potentially classified as non-RCRA hazardous from the RCRA waste.

The excavated material was placed over 20-mil PVC liners and stockpiled for sampling and classification. Following the completion of soil excavation in Area B, verification samples were collected from the floor of all 2-foot-deep excavated grids and sidewalls and delivered to APCL for analysis. The laboratory analytical results for lead were reviewed and compared with the TCG for lead (500 mg/kg) to determine whether additional excavation was required. All grids with lead concentrations exceeding 500 mg/kg were further excavated. The entire floor area of the grids with lead concentrations exceeding the TCG were excavated an additional minimum of 1 foot bgs. All grid sidewalls with lead concentrations exceeding the TCG were excavated a minimum of 5 feet outward, down to the grid floor depth, and along the entire length of the grid wall.

Areas that continued to indicate lead concentrations exceeding 500 mg/kg were excavated further and re-sampled for verification. Verification sample locations and grids or sidewalls that required additional excavation are shown on Figures 4-3 and 4-4.

Unstable earth conditions or groundwater intrusion was not encountered during the excavation operations. For the most part, the excavation was an average of 2 feet deep, except for a couple of localized spots in Areas A and B where several grids with deeper subsurface contamination –

that were identified during the FSI – were excavated down to 4 feet bgs. Following the completion of the excavation and removal of the contaminated soil, an as-built survey of the excavation and verification sample locations was conducted to determine the final extent of the excavation area and the total amount of the excavated material.

The excavation of contaminated soils at SWMU 24 resulted in approximately 1,320 cubic yards of waste soil, or a total of approximately 1,684 tons.

4.7 VERIFICATION SAMPLING OF THE EXCAVATION

Following the completion of the excavation of the original planned excavation area, verification sampling was performed. The floors of both excavations in Area A and Area B were divided into a 10-foot by 10-foot grid pattern, and the sidewalls were divided into 10-foot linear increments. One sample was collected from each floor grid cell and sidewall section. The exact sample location was determined using a computer random-number generator. Two numbers were generated for each grid cell, or linear sidewall section. These two numbers determined the x and y coordinates for each location within each grid or sidewall.

In Area A, the result of the initial verification sample collected from the bottom of Grid C7 indicated a lead concentration of 531 mg/kg that exceeded the TCG. This grid required further excavation and was excavated an additional 1.5 feet. Afterwards, verification samples were collected from the bottom and the sidewalls of Grid C7. The results of the verification samples ranged from 8.9 to 20.6 mg/kg, well below the TCG. No further excavation was required in or around Grid C7. In Area A, the verification sample collected from the north sidewall of Grid A7 and the west sidewall of Grid C9 indicated lead concentrations of 1,930 mg/kg and 903 mg/kg, respectively. These sidewalls were further excavated a minimum of 5 feet laterally and re-sampled for verification. The final verification results for the above sidewalls were 49.3 mg/kg and 55.4 mg/kg, respectively.

In Area B, the north sidewalls of Grids A4, A5, A6, and the west sidewall of Grid E7 indicated lead concentrations of 530 mg/kg, 1,080 mg/kg, 2,590 mg/kg, and 774 mg/kg, respectively, exceeding the TCG of 500 mg/kg for lead. The above sidewalls were excavated an additional 5 feet outward and re-sampled. The Sidewall E7 verification sample results indicated a lead concentration of 585 mg/kg, requiring it to be excavated another 5 feet outward and re-sampled for a third time. The result of the third round of sampling indicated a lead concentration of 21 mg/kg. No further excavation was required at any of the floor grids, and the final confirmation sampling results indicated that the lead concentrations of the residual soil at the site were well below the TCG. Lead concentrations for the verification samples collected in Areas A and B are shown on Figures 4-3 and 4-4, respectively and on Table 4-1.

4.7.1 Verification Sample Collection Methods

Verification samples were collected using 8-ounce, pre-cleaned glass sample jars. The soil sample collected from each random location was scooped and transferred directly into the jars. The jars were closed with a Teflon[®]-coated lid and labeled to identify location, sample number, and time.

4.7.2 Verification Sample Analysis and Results

Approximately 197 verification samples were collected and analyzed during the removal activities, which included 18 field duplicates. A total of 60 perimeter sidewalls were produced following the subdivision of the site area into the 10-foot square grid pattern. All verification samples that were collected at the site were transferred to APCL and analyzed for lead using EPA Method 6010B. Verification sample results are shown on Table 4-1.

With the exception of the samples that indicated lead concentrations exceeding the TCG, lead concentrations of the verification samples collected in Area A ranged from 2.4 mg/kg to 86.5 mg/kg, and lead concentrations from verification samples collected in Area B ranged from 3.1 mg/kg to 315 mg/kg. Of the total 173 verification samples with lead concentrations below TCG, only three samples had concentrations that exceeded the EPA residential PRG of 130 mg/kg for lead. The overall average of lead concentrations for the final verification samples is 10 mg/kg, well below the ICG of 500 mg/kg, EPA residential PRG of 130 mg/kg, and the ULBV of 35.7 mg/kg.

4.7.3 Data Validation

Data validation was performed in accordance with the DON SWDIV Policy Memorandum No. 13, April 9, 1996, by Laboratory Data Consultants, Inc., an independent subcontractor and reviewer. Ten percent of the data were subjected to Level D validation; the remaining 90 percent of the data were subjected to Level C validation. The data validation process consisted of a systematic assessment and verification of data quality. The data validation followed the EPA Contract Laboratory Program National Functional Guidelines (EPA, 1994). One hundred percent of the sample analyses were reviewed for all QC data per EPA guidelines to include checks for proper methodology, level of QC effort (frequency of runs), and for conformance of project-defined quantitative control limits. Ten percent of the samples were checked for raw data errors (calculation algorithms, transcription errors, and special identification errors). Raw data checks on 10 percent of the samples did not show any significant errors. The verification data presented in this report include the results of the evaluation performed by the independent data validator. Validated data have met project quality assurance goals as described in the Quality Assurance Project Plan (FWENC, 2002a). Data validation summary reports are provided in Appendix A, along with the laboratory analytical data and the related chain-of-custody records.

4.8 SOIL STOCKPILING, SAMPLING, AND ANALYSIS

The excavated material was stockpiled on site until final waste classification was made for disposal. By the end of each production day, generally several hundred tons of impacted material were excavated and stockpiled. The areas under the stockpiles were covered with 20-mil polyethylene liner and bermed with clean soil and sandbags to prevent surface water runoff from coming into contact with the stockpiles. In addition, stockpiles were covered with 10-mil polyethylene liner to prevent wind-blown dust emissions and rain from coming into contact with the contaminated soil. Prior to sampling, the height, width, and length of the stockpiles were measured and used to estimate the stockpiles' volumes and weight. In accordance with the Work Plan (FWENC, 2002a) requirements, the stockpiles were partitioned in the field into an estimated 125 cubic yard segments for sampling. The 125-cubic yard stockpile segments were marked and identified in the field using paint, surveying stakes, and markers. According to the Work Plan (FWENC, 2002a), one unique stockpile sample identification number was assigned to each estimated 125-cubic yard batch of excavated and stockpiled soil. Excavated material was segregated using preliminary waste classifications defined in the Work Plan (FWENC, 2002a). Based on stockpile sampling results, excavated soil was classified as either non-RCRA-hazardous waste or non-hazardous waste. Approximately 476 tons of non-RCRA California hazardous waste and 1,218 tons of non-hazardous waste were generated and hauled off site for disposal.

4.8.1 Stockpile Sampling Methods and Procedures

One composite soil sample was collected from each estimated 125-cubic yard batch of stockpiled soil. Composite samples were generated by collecting five soil samples in 8-ounce, pre-cleaned glass jars at random locations and depths from each of the estimated 125-cubic yard batch of stockpiled soil and submitted to the contracted laboratory for homogenization and analysis. A total of 13 composite samples were analyzed for total metals.

4.8.2 Stockpile Sample Analysis and Results

Stockpile composite samples were analyzed for Target Analyte Listed (TAL) metals using EPA Method 6010B/7000. A composite soil sample from a 125-cubic yard batch of stockpile had indicated a lead concentration of 1,010 mg/kg. This concentration exceeded the TTLC for lead of 1,000 mg/kg for RCRA classification. Therefore, TCLP extraction testing (EPA Method 1311) was performed on the stockpile soil sample. A lead concentration of 0.134 milligrams per liter (mg/L) was reported in the TCLP extract. As a result, the stockpiled soil associated with this sample was classified as non-RCRA California hazardous waste. Three stockpile soil samples had indicated a lead concentration that exceeded 100 mg/kg (20 times lead's regulatory TCLP value of 5 mg/L). Therefore, TCLP extraction testing (EPA Method 1311) was performed on those stockpile soil samples. Lead concentrations in the TCLP extracts for those three samples were reported at 0.067 mg/L, 0.178 mg/L, and 0.264 mg/L. None of the TCLP concentrations for any of the samples subjected to TCLP testing exceeded the EPA regulatory levels for a RCRA-

hazardous waste of 5 mg/L; therefore, no soil sample or associated stockpile was classified as RCRA-hazardous waste.

Analysis of soil samples from three 125-cubic yard batch stockpiles indicted lead concentrations that were greater than or equal to 50 mg/kg (10 times the lead STLC value of 5 mg/L). These stockpile samples were designated as potentially non-RCRA hazardous and were subjected to WET analyses. WET analyses were performed using EPA Method 6010B. One sample had a lead concentration of 6.08 mg/L in the extract exceeding the lead STLC value of 5 mg/L. The soil in the stockpile associated with this sample was classified as non-RCRA California hazardous waste. The lead concentrations in the WET extract for the remaining two samples were 3.39 mg/L and 3.62 mg/L. The soil associated with these two samples was classified as non-hazardous waste.

Composite samples from 7 of the 13 batches of stockpile soils had lead concentrations ranging from 17.1 mg/kg to 46.9 mg/kg. The stockpiled soils associated with those samples were classified as non-hazardous waste. Stockpile soil sample analysis results are presented on Table 4-2.

4.9 FIELD SAMPLING METHODS AND PROCEDURES

4.9.1 Sample Containers and Preservation

Soil sample containers consisted of 8-ounce, pre-cleaned, unpreserved, glass jars. The laboratory performing the analyses was responsible for supplying properly decontaminated containers for field sampling.

Before transportation and storage, each soil sample was preserved by cooling to 4 degrees Celsius (°C). Sample preservation was performed in the field by a qualified sampling technician. Once collected and labeled, all samples were immediately stored in plastic coolers at $4 \pm 2^{\circ}\text{C}$ using ice to maintain the temperature.

4.9.2 Sample Packaging and Shipment

Sample containers were placed into a plastic cooler with ice immediately following collection. In order to limit the possibility of breakage, the glass sample containers were segregated with bubble wrap or other similar material. The sample coolers were picked up at the site by the laboratories' courier and delivered to the laboratories.

4.9.3 Sample Documentation

The samples were sealed with a tamper-proof seal and clearly identified with a sample label affixed to the sample container. Each sample label contained the sample number, date of sample collection, time of sample collection, and depth of sample (as applicable).

4.10 WASTE CLASSIFICATION AND DISPOSAL

There were several waste streams that resulted from SWMU 24 remedial activities. These waste streams included excavated soil, used personal protective equipment (PPE), miscellaneous trash, and solid waste.

This section describes the disposal methods for the waste materials generated at the site including solid waste, contaminated soil, and debris. All waste material generated at SWMU 24 was disposed of at CERCLA-approved waste disposal facilities. The selection and use of the disposal facilities were subject to approval under FWENC Subcontractor Qualification Procedures.

4.10.1 Contaminated Soil and Debris Disposal

Following excavation, stockpiling, and classification, excavated soil and debris were disposed of as either non-hazardous waste or California hazardous waste. Waste materials were loaded onto truck trailers and hauled to the Chemical Waste Management, Inc., disposal facility located in Kettleman City, California. This facility is a regulatory and CERCLA-approved and -permitted disposal facility. A total of 73 truck trailers was used for loading and transporting contaminated soils to the disposal facility. Of the 73 truck trailers loaded and hauled away, 20 truck trailers were used for transporting an estimated 476 tons of contaminated soils classified as California hazardous waste, and 51 truck trailers were used for transporting 1,186 tons of contaminated soils classified as non-hazardous. In addition, two truck trailers were also used to load, haul, and dispose of approximately 32 tons of non-hazardous debris (mostly broken up concrete rubble) generated at the site. The truck trailers were supplied by Denbeste Transportation, Inc. A CAT 950 loader and a CAT 325 excavator were used for loading the trailer trucks. A portable scale was mobilized and setup at the site during the loading operations period to weigh each truck trailer before leaving the site in order to ensure compliance with DOT regulations. The scale was fitted with an electronic digital counter that weighed the weight of each axle. The scale had an accuracy of ± 5 percent. The trailer trucks had an average capacity of 23.5 tons. Care was taken not to overload the trucks. A uniform hazardous waste or a non-hazardous waste manifest was filled out for each loaded trailer truck and submitted to the DON for signature. Original copies of the manifests were provided to the transporter for shipment.

4.10.2 Used Personnel Protection Equipment

The on-site excavation activities were performed in Level D or modified Level D PPE. All used PPE materials were placed in 42-gallon trashbags placed in 55-gallon drums for temporary storage. The trashbags containing waste PPE, along with the miscellaneous debris and solid waste, were later placed in a truck trailer and hauled off site for disposal. A profile and a Uniform Hazardous Waste Manifest were prepared and signed by the DON. One 55-gallon drum filled with PPE waste, including used Tyvek® and rubber nitrile gloves, was generated during the removal activities.

4.11 SITE RESTORATION

The restoration included backfilling of the excavated areas and re-grading of the site to blend with the surrounding grades. A CAT 950 loader and a CAT D5M dozer were used for grading the site. No fill material was imported for placement in the excavated areas. The raised existing soil surrounding the excavated areas was used to fill the excavations. This was accomplished by pushing the surrounding soil into the excavation and re-grading the site. This resulted in lowering the general ground elevations at SWMU 24 to match that of its immediate surrounding agricultural farm. The site was graded with the center of the site slightly higher than the rest to prevent ponding.

4.12 DEMOBILIZATION

Demobilization consisted of decontamination and demobilization of all equipment, cleaning the project site, and initial and final inspection upon completion. The activities included decontamination and removal of all construction equipment and materials, as well as collection, removal, and proper disposal of all other materials used at the site including disposable equipment.

4.12.1 Equipment Decontamination

Decontamination was performed on the sampling tools, earthmoving equipment (dozers, excavator, loaders, backhoes, and so forth), and miscellaneous equipment (small tools such as shovels, picks, and so forth). The decontamination procedures outlined below were supervised and accepted by the Site Health and Safety Specialist (SHSS).

- All equipment that came in contact with contaminated soil was brushed clean before leaving the site.
- Special attention was paid to removal of material on and within the bucket and undercarriage of the excavator.
- All equipment was inspected by the SHSS and the Project Superintendent before leaving the site.

4.13 PHOTOGRAPHIC LOG

Photographs of the site were obtained during the implementation of the removal activities. These photographs illustrate the work being conducted during excavation, stockpiling, dust control, and loading of contaminated material for off-site shipment and disposal. The photographs are presented in Appendix C.

4.14 FIELD CHANGES AND VARIANCES

A total of two field changes were made during the course of the field activities at SWMU 24. These were actual field changes, variations, and deviations from what was specified in the

approved Work Plan (FWENC, 2002a). The first change in the plan was replacement of the Contractor Quality Control Engineer. The second change was with regards to backfilling of the excavations. The Work Plan (FWENC, 2002a) states that clean imported soil would be used for backfilling the excavations. However, upon completion of the excavation and considering the site conditions, the raised existing soil surrounding the excavated areas was pushed inside the excavated areas and used as backfill. No imported fill material was necessary. See Section 4.11 for additional information. The changes are documented in FCR forms. Copies of the FCRs are provided in Appendix B.

4.15 PROJECT MANAGEMENT

This section provides an overview of the project management team that is responsible for all technical and administrative aspects of the removal action. Included among the team's responsibilities are the project schedule, staffing, data management, document control, project meetings, and reporting.

The DON RPM for this project is Mr. Si T. Le. Mr. Le was responsible for project management, budget control, schedule maintenance, and contacting regulatory agencies. Ms. Pei-Fen Tamashiro is the NAVWPNSIA IR Program Manager. Ms. Tamashiro was responsible for community relations and ensuring that the field and remedial activities were in compliance with the applicable rules and regulations. Mr. David Crawley is the ROICC and was responsible for the technical oversight of field activities, coordination of field activities with different NAVWPNSIA Seal Beach departments and personnel, and QC. Mr. Chris Leadon is the DON Remedial Technical Manager, responsible for the technical oversight and review of the project documents.

FWENC's Deputy Program Manager (DPM), Dr. Jamshid Sadeghipour, PE, has been responsible for general project administration in order to ensure the quality of all project activities and deliverables. As FWENC's Project Manager, Mr. Hamlet Hamparsumian's responsibilities included general project administration, overseeing budget and schedule, document preparation, and to ensure the quality of all project activities and deliverables. Mr. Glenn Nardin was the Project Superintendent during the field activities and was responsible for managing the fieldwork, providing oversight to the subcontractors, coordinating efforts among all subcontractors, coordinating the field activities with the senior technical staff, coordinating the field activities with the SHSS. Mr. Carl Jones acted as the Project QC Manager and SHSS. As the Project QC Manager, Mr. Jones was responsible for coordinating with the QC Program Manager (Ms. Mary Schneider) to ensure that all field activities were in compliance with the project specifications.

The following is a list of the key contacts:

Agency	Contact	Project Title
Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, CA 92132-5190	Si T. Le (619) 532-1235	DON RPM
Naval Weapons Station Seal Beach 800 Seal Beach Boulevard Building 110 Seal Beach, CA 90740-5000	Pei-Fen Tamashiro (562) 626-7897	NAVWPNSTA IR Program Manager
ROICC Los Angeles Naval Weapons Station Seal Beach Building 230 Seal Beach, CA 90740-5000	David Crawley (562) 626-7964	ROICC
Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, CA 92132-5190	Chris Leadon (619) 532-3878	Remedial Technical Manager
Southwest Division Naval Facilities Engineering Command 1220 Pacific Highway San Diego, CA 92132-5190	Ann Garrett (619) 532-4261	Contracting Officer
California Environmental Protection Agency Department of Toxic Substances Control Office of Military Facilities 5796 Corporate Way Cypress, CA 90630	Katherine K. Leibel (714) 484-5446	DTSC-RPM
California Regional Water Quality Control Board, Santa Ana Region 3737 Main Street, Suite 500 Riverside, CA 92501-3348	Patricia Hannon (909) 782-4498 John Broderic (909) 782-4494	RWQCB-RPM
FWENC 1940 East Deere Avenue, Suite 100 Santa Ana, CA 92705	Jamshid Sadeghipour (949) 756-7519	DPM
FWENC 1940 East Deere Avenue, Suite 200 Santa Ana, CA 92705	Hamlet Hamparsumian (949) 756-7520	Project Manager
FWENC 1940 East Deere Avenue, Suite 100 Santa Ana, CA 92705	Mary Schneider (949) 756-7586	QC Program Manager
FWENC 1940 East Deere Avenue, Suite 100 Santa Ana, CA 92705	Glenn Nardin (714) 822-4691	Superintendent
FWENC 1940 East Deere Avenue, Suite 100 Santa Ana, CA 92705	Carl Jones (949) 756-7538	Project QC Manager

5.0 COSTS OF THE REMOVAL ACTION

This section summarizes the estimated costs of the removal action. The estimated costs include the Prime Contractor's direct and indirect costs, subcontractor costs, taxes, bonds, and insurance.

<u>Activity</u>	<u>Estimated Cost</u>
Remedial design/Closure Report	\$ 42,000.00
Geophysical and land surveying	\$ 4,500.00
Fence/site security	\$ 400.00
Site office expenses (including trailer, sanitary facilities, telephone, etc)	\$ 7,000.00
Health and safety equipment (including air monitoring, supplies, and PPE)	\$ 500.00
Sampling and analysis	\$ 17,000.00
Excavation of lead-contaminated soil (including labor, equipment, and testing)	\$ 30,000.00
Final grading and site restoration (including labor, equipment, and testing)	\$ 4,600.00
Waste transportation and disposal	\$ 81,000.00
Miscellaneous expenses	\$ 2,000.00
Fuel costs	\$ 2,000.00
Professional labor (project oversight)	\$ 83,000.00
Total Costs:	\$ 274,000.00

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6.0 PUBLIC INFORMATION/COMMUNITY RELATIONS ACTIVITIES

Community relations activities were conducted by DON to inform the public about the cleanup activities at SWMU 24 and to encourage involvement in the review of relevant documents and discussion regarding the cleanup plan. These activities are briefly described below.

6.1 PUBLIC INFORMATION

The remediation process is being conducted in accordance with the Community Relations Plan prepared by DON to facilitate public involvement in the decision-making process. The DON, as the lead agency, has overall responsibility for public participation activities. To gain a more thorough understanding of the activities associated with this removal action, the public was encouraged to review documents contained in the Information Repository. As such, this Closeout Report, the Work Plan (FWENC, 2002a), the Final AM/RAW (BNI, 2002a), the Final EE/CA (BNI, 2002b), as well as other information concerning SWMU 24 was made available to the public via the Information Repository located in the Mary Wilson Branch of Seal Beach Public Library. This branch of the library is located at 707 Electric Avenue, Seal Beach, California 90740, (562) 431-3584. The library is open during the following hours:

Monday and Tuesday	12 noon - 8:00 p.m.
Wednesday and Thursday	10:00 a.m. - 6:00 p.m.
Saturday	10:00 a.m. - 5:00 p.m.
Friday and Sunday	Closed

Documents; reports; newsletters; and RAB meeting agendas, minutes, and presentation materials concerning SWMU 24 are included in the repository for public review. The Administrative Record Index is maintained by SWDIV and is available to the public at the SWDIV Naval Facilities Engineering Command, 1220 Pacific Highway, San Diego, California 92132.

6.2 PUBLIC PARTICIPATION

As part of the community outreach effort associated with the Department of Defense IR Program, the DON established a RAB to encourage local participation in the hazardous waste cleanup program at NAVWPNSTA Seal Beach. The board is a citizen-based committee representing local community interests. To encourage local participation in the NAVWPNSTA hazardous waste cleanup program, the RAB held several meetings during the investigation and preparation of the Final EE/CA (BNI, 2002b), Final AM/RAW (BNI, 2002a), and the Work Plan (FWENC, 2002a), and during the execution of the removal action for SWMU 24. The availability of these documents was advertised locally in the *Seal Beach Sun* and the *Orange County Register* newspapers in an effort to encourage the public's involvement. In addition, the DON has prepared a master mailing list of the local community members. Whenever significant

cleanup activities are planned or whenever significant decisions are made, the community members are notified by mail for information purposes and involvement.

The Draft EE/CA (BNI, 2001) for SWMU 24 was issued to the RAB on December 21, 2001, for a 2-month review period. A public notice was posted in the *Orange County Register* and the *Seal Beach Sun* on January 10, 2002, inviting public comments on the Draft EE/CA (BNI, 2001). The public comment period ended February 9, 2002. The purpose of this public notice was to invite the interested community members to review the subject Draft EE/CA (BNI, 2001) and provide their comments or questions. No comments were received from the public. The recommended action in the Final EE/CA (BNI, 2002b) was issued to the agencies on June 19, 2002. The Final EE/CA was used to develop the Draft AM/RAW (BNI, 2002c), the decision document for the selected removal action at SWMU 24. The Draft AM/RAW (BNI, 2002c) was also subjected to the RAB and regulatory review. The Draft AM/RAW (BNI, 2002c) was issued to the agencies and the RAB for review on May 10, 2002.

DTSC, the regulatory agency responsible for the California Environmental Quality Act documentation, prepared the Draft Negative Declaration and submitted a notice of the selected remedy to the public for review and comment. A public notice was posted in the *Seal Beach Sun* and *Orange County Register*. The 30-day public comment period began on July 30, 2002, and ended on August 29, 2002. Once all comments and questions were considered, the AM/RAW for SWMU 24 was finalized and submitted to the agencies for concurrence on October 3, 2002.

A Draft Work Plan (FWENC, 2002b) was submitted to the regulatory agencies and the RAB for review and comment on June 17, 2002, and the comment period ended on August 7, 2002. Prior to performing the removal action, FWENC, under direction of the DON, conducted a presentation for the RAB on June 12, 2002, in order to discuss the cleanup plan and to solicit RAB comments. Following agency and RAB review of the Draft Work Plan, the Final Work Plan was issued on September 26, 2002.

Following the completion of the removal activities, FWENC conducted a presentation for the RAB on March 12, 2003, to provide an overview of the work performed at SWMU 24.

7.0 EFFECTIVENESS OF THE REMOVAL ACTION

The results of the confirmatory sampling performed at the conclusion of the removal action are re-evaluated in this section. The main purpose of this re-evaluation is to assure that the results have, in fact, achieved the RAOs for the site. The RAOs for SWMU 24 were designed to reduce risk to ecological receptors from metals-impacted soil to acceptable levels and to minimize further migration of metals in surface soil at SWMU 24. Furthermore, the site cleanup had to be implemented in a manner that would provide for unrestricted land use upon completion. To help meet these RAOs, a site-specific TCG was established for the COPC, which was lead. The RAOs, the basis for the development of the TCG, and TCG concentration, are discussed in Section 3.2.

7.1 RESULTS OF THE VERIFICATION SAMPLING AFTER THE REMOVAL ACTION

The following is a discussion of the verification test results for the floors and sidewalls of the excavations.

The excavation activities at SWMU 24 started on November 4, 2002. In the course of the impacted soil removal, three rounds of verification sampling were performed following each stage of excavation, beginning on November 6, 2002. After all the contaminated soil was removed, verification sampling was performed in order to confirm that the site-specific TCG of 500 mg/kg established for lead had been achieved and to document the residual concentrations of lead at the site following the completion of the excavation. All areas with lead concentrations greater than the TCG of 500 mg/kg were further excavated. Following additional excavation, the soils in the excavated areas were re-sampled and the process continued until the TCG was achieved. A total of 197 confirmation samples was collected from the floor, and sidewalls of the excavation areas, which included samples from retesting the areas that required further excavation and field duplicate samples. A detailed discussion of the verification sampling and analysis is presented in Section 4.7.2. The laboratory analytical results of the verification samples corresponding to the three rounds of sampling are presented on Figures 4-3 and 4-4. The final lead concentration of the verification samples collected in Areas A and B ranged from 2.4 mg/kg to 315 mg/kg.

Following laboratory analysis of the excavated and stockpiled soil samples and proper waste classification, all contaminated soils from SWMU 24 were transported to and disposed of at an off-site permitted and CERCLA-approved disposal facility. Afterward, the excavated areas were graded to blend with the immediate surroundings.

7.2 SUMMARY OF RESIDUAL RISK

Approximately 1,684 tons of the impacted soil with lead concentrations above the TCG of 500 mg/kg were excavated and removed from SWMU 24.

The residual concentrations of the lead within the excavated areas, as indicated by the analytical results of confirmation samples, are well below the TCG established for this site. Laboratory results of lead concentrations in the confirmation soil sample ranged from 2.4 mg/kg to 315 mg/kg.

Of the total final 173 verification samples collected (not including field duplicates and failed samples that required further excavation), only three samples had concentrations that exceeded the EPA residential PRG of 130 mg/kg for lead. The overall average of lead concentrations for the final verification samples was 10 mg/kg, well below the TCG of 500 mg/kg, EPA residential PRG of 130 mg/kg, and the ULBV of 35.7 mg/kg.

The residual lead concentrations in the soil at SWMU 24 no longer present an ecological risk relative to the surrounding area. As a result of this removal action, the following RAOs have been achieved:

1. Further migration of metals in surface soil at SWMU 24 has been minimized.
2. Risk to ecological receptors from metals-impacted soil has been reduced to acceptable levels.

8.0 RECOMMENDATIONS

Following the excavation of the impacted soils from the site, verification samples were collected and analyzed for residual concentrations of lead. The verification sampling results indicated that lead-impacted soils at SWMU 24 were removed to concentrations well below the established ICG level, thus achieving the RAOs developed in the Final AM/RAW (BNI, 2002a) and Final EE/CA (BNI, 2002b). Furthermore, as a result of the Phase II FSI (CH2M Hill, 2002) findings, it was agreed by the DON and the regulatory agencies that no further action is required for groundwater at SWMU 24. As a result, the removal action at SWMU 24 has been completed and no further action is recommended for this site.

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TABLES

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR THE VERIFICATION SAMPLES - SWMU 24

Sample Number	Sample Date	Location	Sample Depth (feet)	Lead (mg/kg)	Comments
0023-SWMU24-001	11/06/02	AREA B-A1	2	4.3 J	
0023-SWMU24-002	11/06/02	AREA B-A2	2	13.8 J	
0023-SWMU24-003	11/06/02	AREA B-A3	2	4.2 J	
0023-SWMU24-004	11/06/02	AREA B-A4	2	26 J	
0023-SWMU24-005	11/06/02	AREA B-A5	2	19.7 J	
0023-SWMU24-006	11/06/02	AREA B-A6	2	3.8 J	
0023-SWMU24-007	11/06/02	AREA B-A7	2	25.8 J	
0023-SWMU24-008	11/06/02	AREA B-B1	2	3.7 J	
0023-SWMU24-009	11/06/02	AREA B-B2	2	2.9 J	
0023-SWMU24-010	11/06/02	AREA B-B3	2	4.7 J	
0023-SWMU24-011 (FD)	11/06/02	AREA B-B3	2	4.5 J	
0023-SWMU24-012	11/06/02	AREA B-B4	2	5.6 J	
0023-SWMU24-013	11/06/02	AREA B-B5	2	7.5 J	
0023-SWMU24-014	11/06/02	AREA B-B6	2	10.4 J	
0023-SWMU24-015	11/06/02	AREA B-B7	2	73 J	
0023-SWMU24-016	11/06/02	AREA B-C1	2	11.4 J	
0023-SWMU24-017	11/06/02	AREA B-C2	2	9 J	
0023-SWMU24-018	11/06/02	AREA B-C3	2	5.2 J	
0023-SWMU24-019	11/06/02	AREA B-C4	2	21.9 J	
0023-SWMU24-020	11/06/02	AREA B-C5	2	6.2 J	
0023-SWMU24-021	11/06/02	AREA B-C6	2	11.8 J	
0023-SWMU24-022 (FD)	11/06/02	AREA B-C6	2	51.3 J	
0023-SWMU24-023	11/06/02	AREA B-C7	2	36.2	
0023-SWMU24-024	11/06/02	AREA B-D1	2	10.5	
0023-SWMU24-025	11/06/02	AREA B-D2	2	5.9	
0023-SWMU24-026	11/06/02	AREA B-D3	2	15.1	
0023-SWMU24-027	11/06/02	AREA B-D4	2	6.3	
0023-SWMU24-028	11/06/02	AREA B-D5	2	5.2	
0023-SWMU24-029	11/06/02	AREA B-D6	2	22.3	
0023-SWMU24-030	11/06/02	AREA B-D7	2	3.1	
0023-SWMU24-031	11/06/02	AREA B-E1	2	6.9	
0023-SWMU24-032	11/06/02	AREA B-E2	2	26.7	
0023-SWMU24-033 (FD)	11/06/02	AREA B-E2	2	19.6	
0023-SWMU24-034	11/06/02	AREA B-E3	2	5	
0023-SWMU24-035	11/06/02	AREA B-E4	2	5.4	
0023-SWMU24-036	11/06/02	AREA B-E5	2	26.3	
0023-SWMU24-037	11/06/02	AREA B-E6	2	3.2	
0023-SWMU24-038	11/06/02	AREA B-E7	2	6.8	
0023-SWMU24-039	11/06/02	AREA B-F1	2	50.6	
0023-SWMU24-040	11/06/02	AREA B-F2	2	15	
0023-SWMU24-041	11/06/02	AREA B-F3	3.5	7.3	
0023-SWMU24-042	11/06/02	AREA B-F4	3.5	7.5	
0023-SWMU24-043	11/06/02	AREA B-F5	2	71.9	
0023-SWMU24-044 (FD)	11/06/02	AREA B-F5	2	48.3	
0023-SWMU24-045	11/06/02	AREA B-F6	2	15.9	
0023-SWMU24-046	11/06/02	AREA B-F7	2	133	

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR THE VERIFICATION SAMPLES - SWMU 24

Sample Number	Sample Date	Location	Sample Depth (feet)	Lead (mg/kg)	Comments
0023-SWMU24-047	11/06/02	AREA B-G3	3.5	8.8	
0023-SWMU24-048	11/06/02	AREA B-G4	3.5	8.7	
0023-SWMU24-049	11/06/02	AREA B-A1N SIDEWALL	-	6.6	
0023-SWMU24-050	11/06/02	AREA B-A2N SIDEWALL	-	7.8	
0023-SWMU24-051	11/06/02	AREA B-A3N SIDEWALL	-	10.3	
0023-SWMU24-052	11/06/02	AREA B-A4N SIDEWALL	-	530	Exceeded TCG, excavated further and resampled. See sample # 0023-SWMU24-197
0023-SWMU24-053	11/06/02	AREA B-A5N SIDEWALL	-	1080	Exceeded TCG excavated further and resampled. See sample # 0023-SWMU24-198
0023-SWMU24-054	11/06/02	AREA B-A6N SIDEWALL	-	65.7	
0023-SWMU24-055 (FD)	11/06/02	AREA B-A6N SIDEWALL	-	2590	Exceeded TCG excavated further and resampled. See sample # 0023-SWMU24-199
0023-SWMU24-056	11/06/02	AREA B-A7N SIDEWALL	-	90	
0023-SWMU24-057	11/06/02	AREA B-A1E SIDEWALL	-	39.8	
0023-SWMU24-058	11/06/02	AREA B-B1E SIDEWALL	-	21.6	
0023-SWMU24-059	11/06/02	AREA B-C1E SIDEWALL	-	184	
0023-SWMU24-060	11/06/02	AREA B-D1E SIDEWALL	-	315	
0023-SWMU24-061	11/06/02	AREA B-E1E SIDEWALL	-	68.8	
0023-SWMU24-062	11/06/02	AREA B-F1E SIDEWALL	-	33.3	
0023-SWMU24-063	11/06/02	AREA B-F1S SIDEWALL	-	25	
0023-SWMU24-064	11/06/02	AREA B-F2S SIDEWALL	-	26.2	
0023-SWMU24-065	11/06/02	AREA B-G3E SIDEWALL	-	11.4	
0023-SWMU24-066 (FD)	11/06/02	AREA B-G3E SIDEWALL	-	132	
0023-SWMU24-067	11/06/02	AREA B-G3S SIDEWALL	-	14.4	
0023-SWMU24-068	11/06/02	AREA B-G4S SIDEWALL	-	21.3	
0023-SWMU24-069	11/06/02	AREA B-G4N SIDEWALL	-	10.3	
0023-SWMU24-070	11/06/02	AREA B-F5S SIDEWALL	-	8.5	
0023-SWMU24-071	11/06/02	AREA B-F6S SIDEWALL	-	75.2	
0023-SWMU24-072	11/06/02	AREA B-F7S SIDEWALL	-	29.2	
0023-SWMU24-073	11/06/02	AREA B-F7W SIDEWALL	-	20.5	
0023-SWMU24-074	11/06/02	AREA B-E7W SIDEWALL	-	774	Exceeded TCG excavated further and resampled. See sample # 0023-SWMU24-200
0023-SWMU24-075	11/06/02	AREA B-D7W SIDEWALL	-	14.4	
0023-SWMU24-076	11/06/02	AREA B-C7W SIDEWALL	-	312	
0023-SWMU24-077 (FD)	11/06/02	AREA B-C7W SIDEWALL	-	215	
0023-SWMU24-078	11/06/02	AREA B-B7W SIDEWALL	-	9.7	
0023-SWMU24-079	11/06/02	AREA B-A7W SIDEWALL	-	166	
0023-SWMU24-091	11/07/02	AREA A-A1	2	6.4	
0023-SWMU24-092	11/07/02	AREA A-A2	2	13.5	
0023-SWMU24-093	11/07/02	AREA A-A3	2	9.6	
0023-SWMU24-094	11/07/02	AREA A-A4	2	11.2	
0023-SWMU24-095	11/07/02	AREA A-A5	2	10	
0023-SWMU24-096	11/07/02	AREA A-A6	2	7.1	
0023-SWMU24-097	11/07/02	AREA A-A7	2	5.2	
0023-SWMU24-098	11/07/02	AREA A-A8	2	12	
0023-SWMU24-099	11/07/02	AREA A-A9	2	4.9	
0023-SWMU24-100	11/07/02	AREA A-B1	2	5.3	

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR THE VERIFICATION SAMPLES - SWMU 24

Sample Number	Sample Date	Location	Sample Depth (feet)	Lead (mg/kg)	Comments
0023-SWMU24-101 (FD)	11/07/02	AREA A-B1	2	5	
0023-SWMU24-102	11/07/02	AREA A-B2	2	3.8	
0023-SWMU24-103	11/07/02	AREA A-B3	2	5.8	
0023-SWMU24-104	11/07/02	AREA A-B4	2	3.5	
0023-SWMU24-105	11/07/02	AREA A-B5	2	6.1	
0023-SWMU24-106	11/07/02	AREA A-B6	2	4.3	
0023-SWMU24-107	11/07/02	AREA A-B7	2	16.4	
0023-SWMU24-108	11/07/02	AREA A-B8	2	4.1	
0023-SWMU24-109	11/07/02	AREA A-B9	2	3.9	
0023-SWMU24-110	11/07/02	AREA A-C1	2	4.9	
0023-SWMU24-111	11/07/02	AREA A-C2	2	4.9	
0023-SWMU24-112 (FD)	11/07/02	AREA A-C2	2	17.3	
0023-SWMU24-113	11/07/02	AREA A-C3	2	3.8 J	
0023-SWMU24-114	11/07/02	AREA A-C4	2	3.2 J	
0023-SWMU24-115	11/07/02	AREA A-C5	2	3.9 J	
0023-SWMU24-116	11/07/02	AREA A-C6	2	8.5 J	
0023-SWMU24-117	11/07/02	AREA A-C7	2	531 J	Exceeded TCG, excavated further and resampled. See sample # 0023-SWMU24-203 204, 205, 206, 207.
0023-SWMU24-118	11/07/02	AREA A-C8	2	6 J	
0023-SWMU24-119	11/07/02	AREA A-C9	2	3.7 J	
0023-SWMU24-120	11/07/02	AREA A-D1	2	7.4 J	
0023-SWMU24-121	11/07/02	AREA A-D2	2	5.3 J	
0023-SWMU24-122	11/07/02	AREA A-D3	2	3.3 J	
0023-SWMU24-123 (FD)	11/07/02	AREA A-D3	2	3.5 J	
0023-SWMU24-124	11/07/02	AREA A-D4	2	64.9 J	
0023-SWMU24-125	11/07/02	AREA A-D5	2	4.5 J	
0023-SWMU24-126	11/07/02	AREA A-D6	2	31.3 J	
0023-SWMU24-127	11/07/02	AREA A-D7	2	17.8 J	
0023-SWMU24-128	11/07/02	AREA A-D8	2	9.7 J	
0023-SWMU24-129	11/07/02	AREA A-D9	2	20.8 J	
0023-SWMU24-130	11/07/02	AREA A-E1	2	6.1 J	
0023-SWMU24-131	11/07/02	AREA A-E2	2	13.7 J	
0023-SWMU24-132	11/07/02	AREA A-E3	2	7.3 J	
0023-SWMU24-133	11/07/02	AREA A-E4	2	4.7 J	
0023-SWMU24-134 (FD)	11/07/02	AREA A-E4	2	4.3 J	
0023-SWMU24-135	11/07/02	AREA A-E5	2	8.8	
0023-SWMU24-136	11/07/02	AREA A-E6	2	7.3	
0023-SWMU24-137	11/07/02	AREA A-E7	2	9.8	
0023-SWMU24-138	11/07/02	AREA A-E8	2	17.9	
0023-SWMU24-139	11/07/02	AREA A-E9	2	8.7	
0023-SWMU24-140	11/07/02	AREA A-F1	2	8.2	
0023-SWMU24-141	11/07/02	AREA A-F2	2	7.5	
0023-SWMU24-142	11/07/02	AREA A-F3	2	86.5	
0023-SWMU24-143	11/07/02	AREA A-F4	2	16.2	
0023-SWMU24-144	11/07/02	AREA A-F5	2	10.8	
0023-SWMU24-145 (FD)	11/07/02	AREA A-F5	2	10.1	

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR THE VERIFICATION SAMPLES - SWMU 24

Sample Number	Sample Date	Location	Sample Depth (feet)	Lead (mg/kg)	Comments
0023-SWMU24-146	11/07/02	AREA A-F6	2	11.2	
0023-SWMU24-147	11/07/02	AREA A-F7	2	20.1	
0023-SWMU24-148	11/07/02	AREA A-F8	2	5.1	
0023-SWMU24-149	11/07/02	AREA A-F9	2	17.9	
0023-SWMU24-150	11/07/02	AREA A-G1	2	8	
0023-SWMU24-151	11/07/02	AREA A-G2	2	10	
0023-SWMU24-152	11/07/02	AREA A-G3	2	13.5	
0023-SWMU24-153	11/07/02	AREA A-G4	2	19.7	
0023-SWMU24-154	11/07/02	AREA A-G5	2	16.2	
0023-SWMU24-155	11/07/02	AREA A-G6	2	4.8	
0023-SWMU24-156 (FD)	11/07/02	AREA A-G6	2	4.7	
0023-SWMU24-157	11/07/02	AREA A-G7	2	4.8	
0023-SWMU24-158	11/07/02	AREA A-G8	2	7.3	
0023-SWMU24-159	11/07/02	AREA A-G9	2	5.6	
0023-SWMU24-160	11/07/02	AREA A-A1N SIDEWALL	-	24.7	
0023-SWMU24-161	11/07/02	AREA A-A2N SIDEWALL	-	6.2	
0023-SWMU24-162	11/07/02	AREA A-A3N SIDEWALL	-	42.6	
0023-SWMU24-163	11/07/02	AREA A-A4N SIDEWALL	-	11.8	
0023-SWMU24-164	11/07/02	AREA A-A5N SIDEWALL	-	14.8	
0023-SWMU24-165	11/07/02	AREA A-A6N SIDEWALL	-	13	
0023-SWMU24-166	11/07/02	AREA A-A7N SIDEWALL	-	203	
0023-SWMU24-167 (FD)	11/07/02	AREA A-A7N SIDEWALL	-	1930	Exceeded TCG, excavated further and resampled. See sample # 0023-SWMU24-201
0023-SWMU24-168	11/07/02	AREA A-A8N SIDEWALL	-	6.6	
0023-SWMU24-169	11/07/02	AREA A-A9N SIDEWALL	-	4.7	
0023-SWMU24-170	11/07/02	AREA A-A1E SIDEWALL	-	25	
0023-SWMU24-171	11/07/02	AREA A-B1E SIDEWALL	-	22.9	
0023-SWMU24-172	11/07/02	AREA A-C1E SIDEWALL	-	16.4	
0023-SWMU24-173	11/07/02	AREA A-D1E SIDEWALL	-	22.2	
0023-SWMU24-174	11/07/02	AREA A-E1E SIDEWALL	-	13.4	
0023-SWMU24-175	11/07/02	AREA A-F1E SIDEWALL	-	9.1	
0023-SWMU24-176	11/07/02	AREA A-G1E SIDEWALL	-	12.4	
0023-SWMU24-177	11/07/02	AREA A-G1S SIDEWALL	-	4.4	
0023-SWMU24-178 (FD)	11/07/02	AREA A-G1S SIDEWALL	-	4.3	
0023-SWMU24-179	11/07/02	AREA A-G2S SIDEWALL	-	35.1	
0023-SWMU24-180	11/07/02	AREA A-G3S SIDEWALL	-	9	
0023-SWMU24-181	11/07/02	AREA A-G4S SIDEWALL	-	5.9	
0023-SWMU24-182	11/07/02	AREA A-G5S SIDEWALL	-	15.6	
0023-SWMU24-183	11/07/02	AREA A-G6S SIDEWALL	-	13.8	
0023-SWMU24-184	11/07/02	AREA A-G7S SIDEWALL	-	12.6	
0023-SWMU24-185	11/07/02	AREA A-G8S SIDEWALL	-	12.7	
0023-SWMU24-186	11/07/02	AREA A-G9S SIDEWALL	-	2.9	
0023-SWMU24-187	11/07/02	AREA A-G9W SIDEWALL	-	2.4	
0023-SWMU24-188	11/07/02	AREA A-F9W SIDEWALL	-	3.6	
0023-SWMU24-189 (FD)	11/07/02	AREA A-F9W SIDEWALL	-	3.2	
0023-SWMU24-190	11/07/02	AREA A-E9W SIDEWALL	-	5.4	

TABLE 4-1

SUMMARY OF ANALYTICAL RESULTS FOR THE VERIFICATION SAMPLES - SWMU 24

Sample Number	Sample Date	Location	Sample Depth (feet)	Lead (mg/kg)	Comments
0023-SWMU24-191	11/07/02	AREA A-D9W SIDEWALL	-	14.1	
0023-SWMU24-192	11/07/02	AREA A-C9W SIDEWALL	-	903	Exceeded TCG excavated further and resampled. See sample # 0023-SWMU24-202
0023-SWMU24-193	11/07/02	AREA A-B9W SIDEWALL	-	7.4	
0023-SWMU24-194	11/07/02	AREA A-A9W SIDEWALL	-	19.9	
0023-SWMU24-195 (FD)	11/07/02	AREA A-A9W SIDEWALL	-	14.4	
0023-SWMU24-197	11/12/02	AREA B-A4N SIDEWALL	-	110	Retest of overexcavation
0023-SWMU24-198	11/12/02	AREA B-A5N SIDEWALL	-	24	Retest of overexcavation
0023-SWMU24-199	11/12/02	AREA B-A6N SIDEWALL	-	8.1	Retest of overexcavation
0023-SWMU24-200	11/12/02	AREA B-E7W SIDEWALL	-	585	Retest of overexcavation exceeded TCG, excavated further and resampled See sample # 0023-SWMU24-210
0023-SWMU24-201	11/12/02	AREA A-A7N SIDEWALL	-	49.3	Retest of overexcavation
0023-SWMU24-202	11/12/02	AREA A-C9W SIDEWALL	-	55.4	Retest of overexcavation
0023-SWMU24-203	11/12/02	AREA A-C7E SIDEWALL	-	10.2	Retest of overexcavation Grid C7
0023-SWMU24-204	11/12/02	AREA A-C7N SIDEWALL	-	8.9	Retest of overexcavation Grid C7
0023-SWMU24-205	11/12/02	AREA A-C7W SIDEWALL	-	20.6	Retest of overexcavation Grid C7
0023-SWMU24-206	11/12/02	AREA A-C7S SIDEWALL	-	8.5	Retest of overexcavation Grid C7
0023-SWMU24-207 (FD)	11/12/02	AREA A-C7S SIDEWALL	-	9.1	Retest of overexcavation Grid C7
0023-SWMU24-208	11/12/02	AREA A-C7	3	14.5	Retest of overexcavation Grid C7
0023-SWMU24-210	11/15/02	AREA B-E7W SIDEWALL	-	21	Third retest of overexcavation

Notes:
Indicates value above TCG of 500 mg/kg
FD - field duplicate
J - estimated value
mg/kg - milligrams per kilogram
SWMU - Solid Waste Management Unit
TCG - target cleanup goal

TABLE 4-2

SUMMARY OF ANALYTICAL RESULTS FOR THE STOCKPILE SAMPLES - SWMU 24

Sample Number		0023-SWMU24-080	0023-SWMU24-081	0023-SWMU24-082	0023-SWMU24-083	0023-SWMU24-084	0023-SWMU24-085	0023-SWMU24-086	0023-SWMU24-087	0023-SWMU24-088	0023-SWMU24-089	0023-SWMU24-090	0023-SWMU24-196	0023-SWMU24-209
Sample Location / Stockpile Designation		D1	D1	D1	C1	C1	C1	C1	C1	C1	C1	C1	C2	D2
Sample Date		11/6/2002	11/6/2002	11/6/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/7/2002	11/12/2002
Analyte	Units													
<i>Metals (EPA Method 6010B/7000)</i>														
ANTIMONY	mg/kg	6.8	1.5 J	1.1 J	5.3 U	5.4 U	5.3 U	5.5 U	5.3 U	6.6 U	5.4 U	5.5 U	5.6 U	3.6 J
ARSENIC	mg/kg	3.7	2.7	3.8	3.3	3.1	4.2	3.1	3.1	4.2	3	3.9	3.3	5.6
BARIUM	mg/kg	73.8	116	86.9	55.5	72.1	68	85.5	63.9	77.4	81.3	67.1	86.4	188
BERYLLIUM	mg/kg	0.22 U	0.22 U	0.23 U	0.21 U	0.21 U	0.21 U	0.22 U	0.21 U	0.26 U	0.22 U	0.22 U	0.22 U	0.23 U
CADMIUM	mg/kg	2.3	0.66	0.95	0.082 J	0.18 J	0.086 J	0.18 J	0.47	1.9	0.39	0.29	0.23	0.22 J
CHROMIUM	mg/kg	13.6	15.8	17.6	13.4	15.7	15.5	17.8	14.6	15.5	16	14.5	18.2	16.5
COBALT	mg/kg	7.3	8.6	9.7	6.5	7.7	7.8	9	7.1	7.1	7.9	7.2	9.7	9.6
COPPER	mg/kg	29.2	23.5	23.8	12.6	15.4	14.2	17.8	15.3	24	23.6	16.6	18.8	26.7
LEAD	mg/kg	1010	60.8	163	17.1	22.4	18	18	118	70.3	325	43.7	17.9	46.9
MERCURY	mg/kg	0.024 J	0.05 J	0.032 J	0.074 J	0.12 J	0.071 J	0.089 J	0.12 J	0.1 J	0.071 J	0.085 J	0.069 J	0.028 J
MOLYBDENUM	mg/kg	0.25	0.22 U	0.23 U	0.21 U	0.21 U	0.21 U	0.22 U	0.21 U	0.26 U	0.22 U	0.22 U	0.22 U	0.23 U
NICKEL	mg/kg	9.7	11.3	12.4	9.4	10.5	11.1	12.7	10	10.5	11.2	10.4	13.4	13.2
SELENIUM	mg/kg	0.81	0.56 U	0.57 U	1.5	1.6	1.3	1.2	1.3	1.4	1.2	1.3	2.2	0.58 U
SILVER	mg/kg	0.55 U	0.56 U	0.57 U	0.53 U	0.54 U	0.53 U	0.55 U	0.53 U	0.66 U	0.54 U	0.55 U	0.56 U	0.58 U
THALLIUM	mg/kg	0.55 U	0.56 U	0.57 U	0.53 U	0.54 U	0.53 U	0.55 U	0.53 U	0.66 U	0.54 U	0.55 U	0.56 U	0.58 U
VANADIUM	mg/kg	28.4	32.9	36.7	26.8	32.6	31.9	34.7	29.1	30.4	33.6	30	38.5	35.2
ZINC	mg/kg	60.3	55.9	67.6	46.4	55.9	54	63.5	52.3	62.5	65.7	58	72.6	159
STLC LEAD	µg/L	NA	NA	NA	NA	NA	NA	NA	3620	6080	3390	NA	NA	NA
TCLP LEAD	µg/L	134	NA	264	NA	NA	NA	NA	67.5	NA	178	NA	NA	NA

Notes:

Indicates California-non-RCRA hazardous waste classification

EPA - U.S. Environmental Protection Agency

J - estimated value

µg/L - micrograms per liter

mg/kg - milligrams per kilogram

NA - not analyzed

RCRA - Resource Conservation and Recovery Act

STLC - Soluble Threshold Limit Concentration

TCG - target cleanup goal

TCLP - Toxicity Characteristic Leaching Procedure

U - not detected at or above the reporting limit (value indicates the reporting limit)

FIGURES

I:\1990--RAC\CTO--0023\OWG\033117\03311711.DWG
PLOT/UPDATE: JUN 27 2003 11:49:55

DRAWN BY: MD	CHECKED BY: HH	APPROVED BY: HH	DCN: FWSD-RAC-03-3117	DRAWING NO: 03311711.DWG
DATE: 06/27/03	REV: REVISION 0		CTO: #0023	

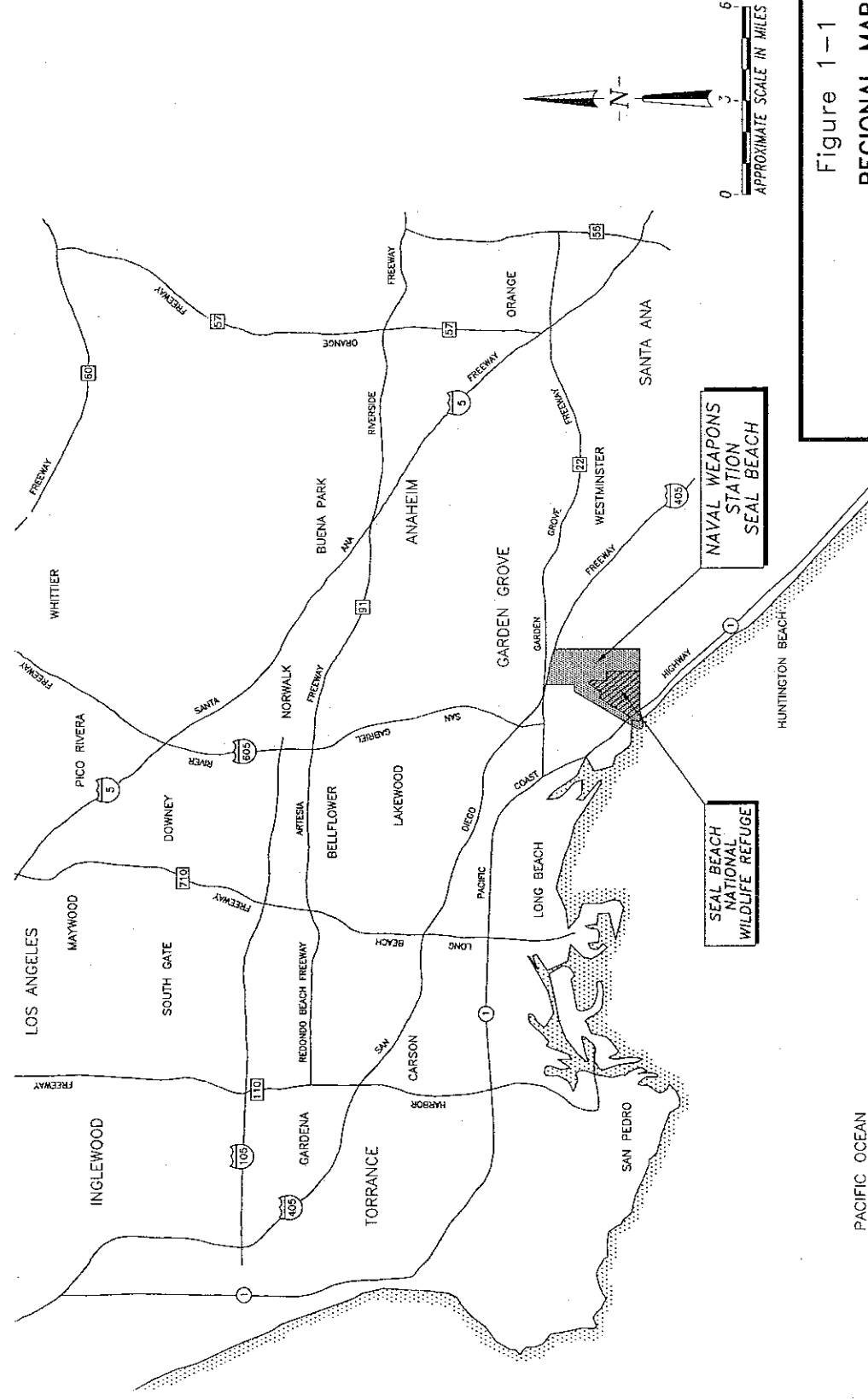



Figure 1-1
REGIONAL MAP
SWMU 24

NAVWPNSTA SEAL BEACH
SEAL BEACH, CALIFORNIA

**FOSTER  WHEELER
ENVIRONMENTAL CORPORATION**

SOURCE: 2000a

I:\1990-RAC\CTO--0023\DWG\033117\03311712.DWG
PLOT/UPDATE: JUN 27 2003 11:51:45

DRAWN BY: MD	CHECKED BY: HH	APPROVED BY: HH	DCN: FWD-RAC-03-3117	DRAWING NO:
DATE: 06/27/03	REV: REVISION 0		CTO: #0023	03311712.DWG

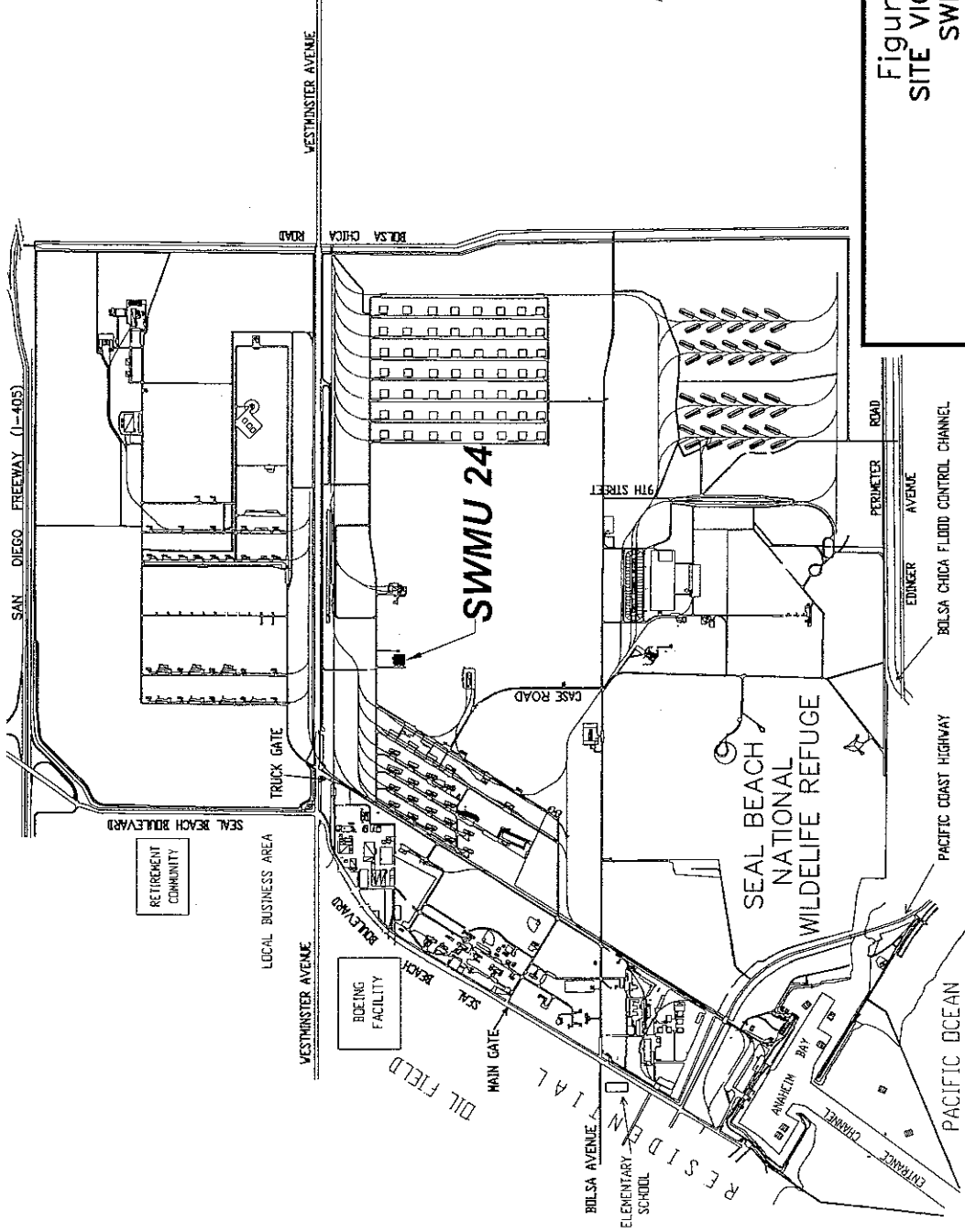


Figure 1-2
SITE VICINITY MAP
SWMU 24

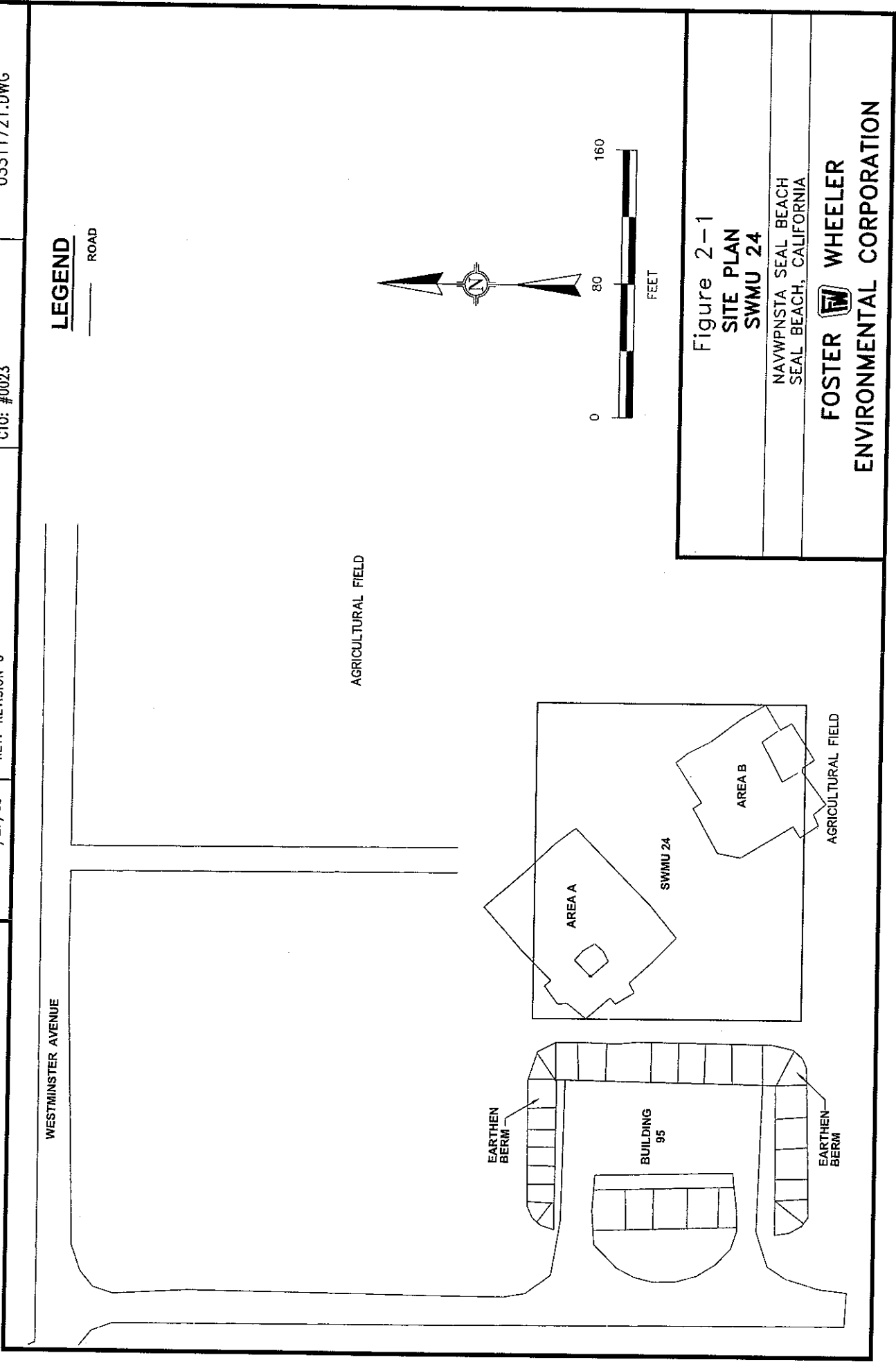
NAVWPSTA SEAL BEACH
SEAL BEACH, CALIFORNIA

FOSTER  WHEELER
ENVIRONMENTAL CORPORATION

SOURCE: BNI, 2000.

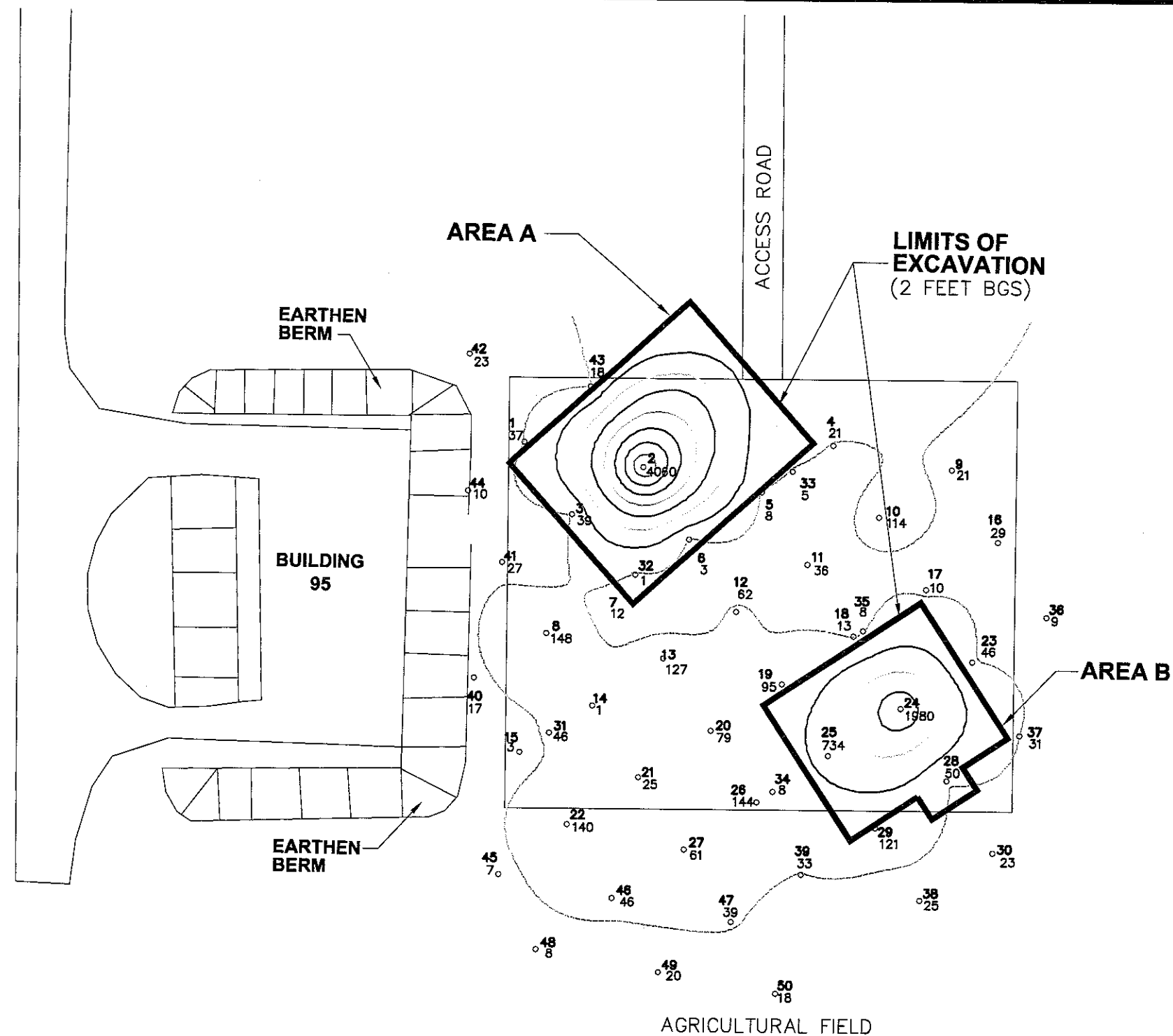
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PLOT/UPDATE: JUL 08 2003 08:39:03

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DATE: 06/27/03	REV: REVISION 0		CTO: #0023	03311721.DWG



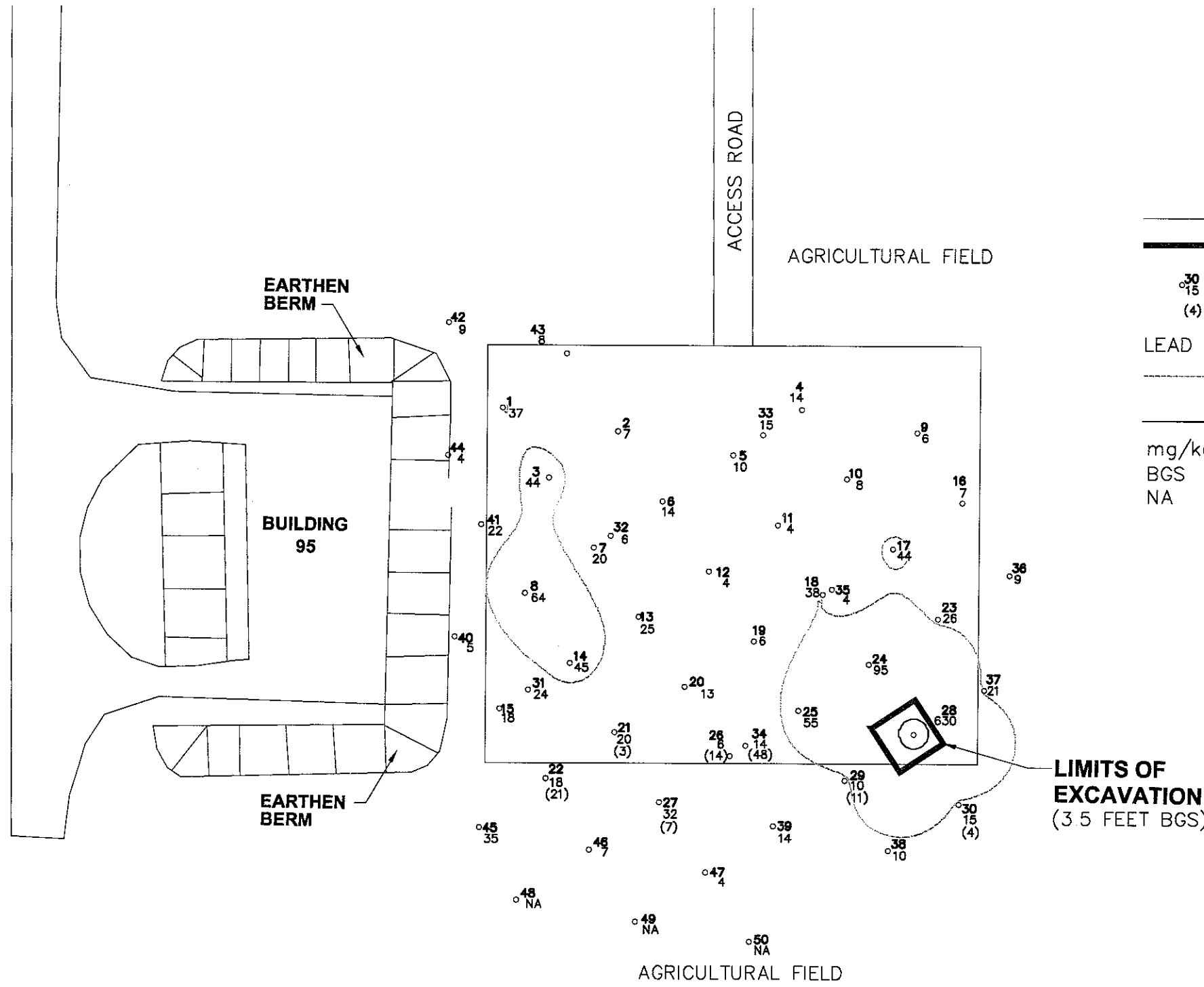
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 PLOT/UPDATE: JUN 27 2003 11:56:10



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CHECKED BY: PT	REV: REVISION 0
DRAWN BY: MD	DATE: 06/27/03
APPROVED BY: HH	

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PLOT/UPDATE: JUN 27 2003 12:30:48



LEGEND

- ROAD
- BUILDING
- SAMPLE LOCATION
- LEAD CONCENTRATION (mg/kg) AT 2.0-2.5 FEET BGS.
- (4) LEAD CONCENTRATION (mg/kg) AT 4.0-4.5 FEET BGS.
- LEAD CONCENTRATION INTERVALS
- 35.7 mg/kg, THE UPPER LIMIT
- BACKGROUND VALUE FOR LEAD
- 500 mg/kg
- mg/kg MILLIGRAMS PER KILOGRAM
- BGS BELOW GROUND SURFACE
- NA NOT ANALYZED FOR LEAD AT THIS LOCATION

SOURCE:

CH2M HILL, 2002

Figure 4-2
SWMU 24
LEAD CONCENTRATION IN SOIL AT 2.0-2.5 FEET AND 4.0-4.5 FEET BGS-BASED ON INVESTIGATION RESULTS
NAVWPNSTA SEAL BEACH
SEAL BEACH, CALIFORNIA
FOSTER WHEELER
ENVIRONMENTAL CORPORATION

DRAWING NO: 03311743.DWG	
DCN: FWSO-RAC-03-3117	CTO: #0023
CHECKED BY: SP	REV: REVISION 0
DRAWN BY: MD	DATE: 06/27/03

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 PLOT/UPDATE: JUN 27 2003 12:39:40

LEGEND

- AS-BUILT LIMITS OF EXCAVATION
- FIRST ROUND OF OVEREXCAVATION
- A1 SAMPLE LOCATION
- 6.4 LEAD CONCENTRATION (mg/kg)

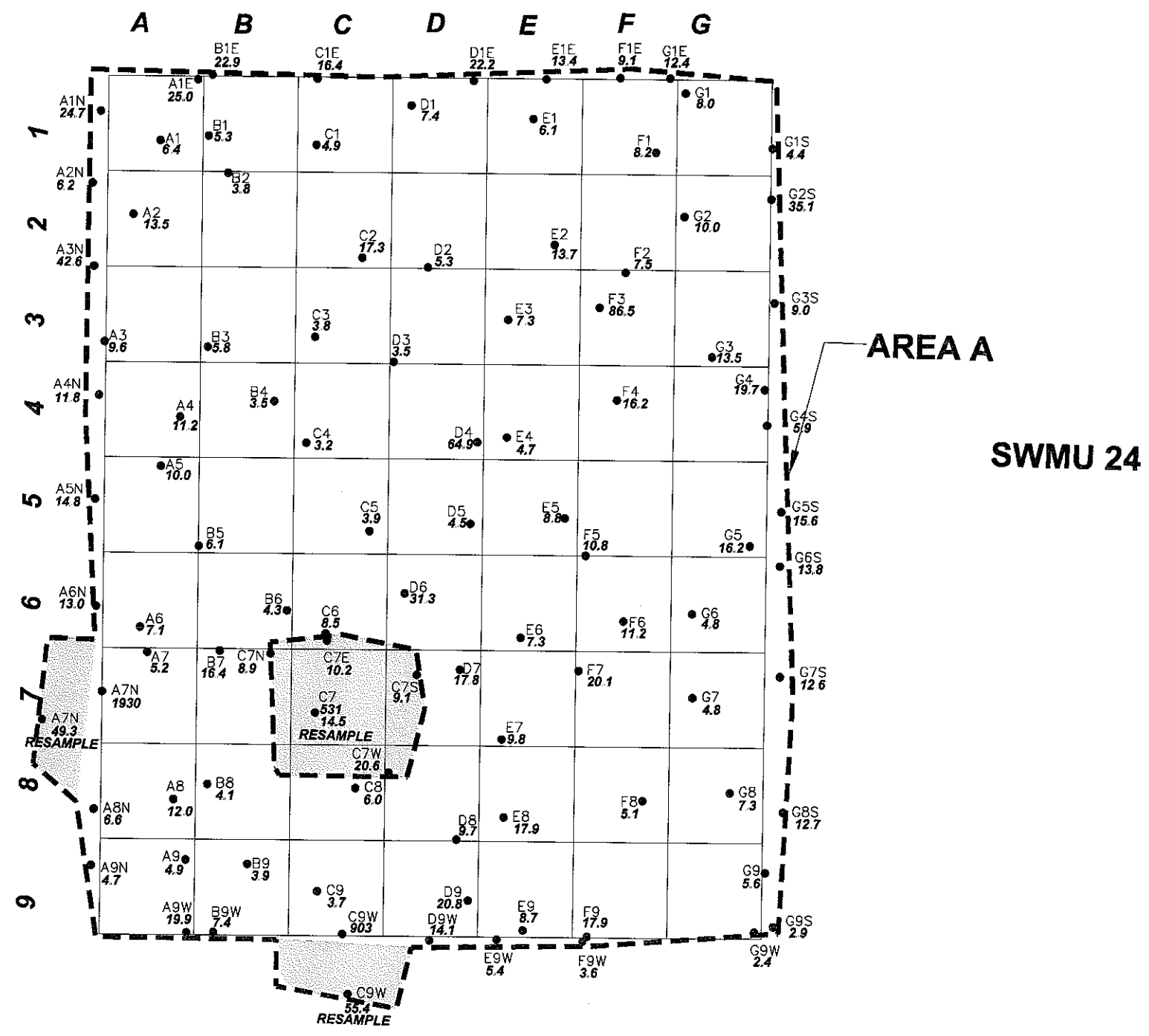


Figure 4-3
SWMU 24
 VERIFICATION SAMPLE LOCATIONS AND
 LEAD CONCENTRATIONS - AREA A
 NAVWPNSTA SEAL BEACH
 SEAL BEACH, CALIFORNIA
FOSTER WHEELER
 ENVIRONMENTAL CORPORATION

DRAWN BY: MD	CHECKED BY: SP	APPROVED BY: HH	DCN: FWSO-RAC-03-3117	DRAWING NO: 03311744.DWG
			DATE: 06/27/03	CTO: #0023

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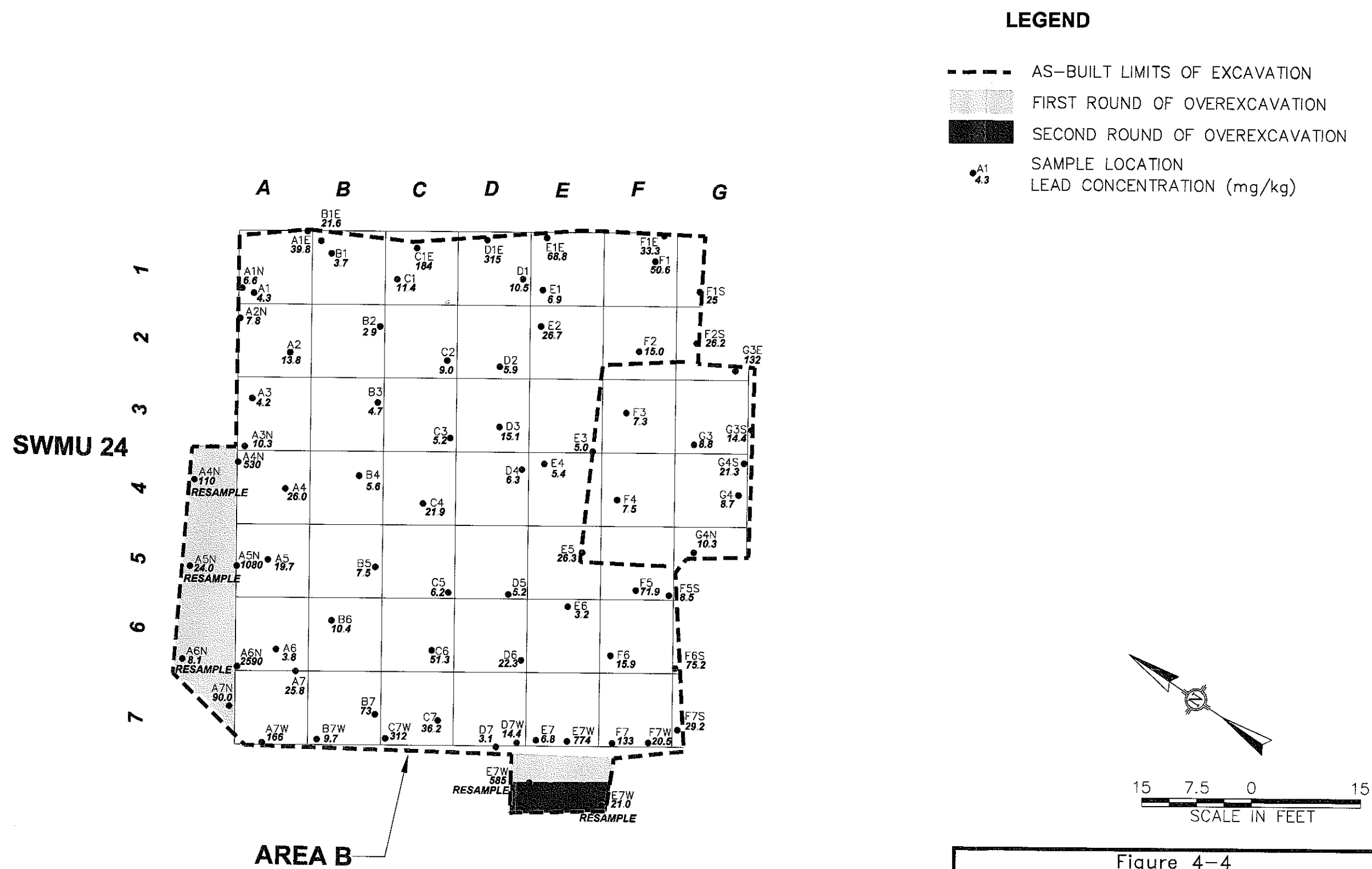


Figure 4-4
SWMU 24
 VERIFICATION SAMPLE LOCATIONS AND
 LEAD CONCENTRATIONS - AREA B
 NAVWPNSTA SEAL BEACH
 SEAL BEACH, CALIFORNIA
FOSTER WHEELER
 ENVIRONMENTAL CORPORATION

APPENDIX A

**CHAIN-OF-CUSTODY, LABORATORY ANALYTICAL REPORTS,
AND DATA VALIDATION SUMMARY REPORTS**

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWAN 24		PURCHASE ORDER NO. 020721-Deck 18		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory										
PROJECT LOCATION NAV WPN Soil Bench, CA		PROJECT NO. 1970.023D												LABORATORY ID (FOR LABORATORY) 02-5896												
SAMPLER NAME Nicholas W. Winkler		SAMPLER SIGNATURE <i>Nicholas W. Winkler</i>												COMMENTS		LOCATION		DEPTH START END		LOC						
PROJECT CONTACT Lisa Brown, K1		AIRBILL NUMBER 020721-Deck 18																								
SAMPLE ID		DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL		TYP		TAT												Area B-A1		2' - Reg		Reg	
0023-SWAN24-001		11/6/02	1023	1	✓	✓	✓	✓	✓	✓											Area B-A2		2' - Reg		Reg	
0023-SWAN24-002		11/6/02	1026	1	✓	✓	✓	✓	✓	✓											Area B-A3		2' - Reg		Reg	
0023-SWAN24-003		11/6/02	1029	1	✓	✓	✓	✓	✓	✓											Area B-A4		2' - Reg		Reg	
0023-SWAN24-004		11/6/02	1031	1	✓	✓	✓	✓	✓	✓											Area B-A5		2' - Reg		Reg	
0023-SWAN24-005		11/6/02	1034	1	✓	✓	✓	✓	✓	✓											Area B-A6		2' - Reg		Reg	
0023-SWAN24-006		11/6/02	1036	1	✓	✓	✓	✓	✓	✓											Area B-A7		2' - Reg		Reg	
0023-SWAN24-007		11/6/02	1038	1	✓	✓	✓	✓	✓	✓											Area B-B1		2' - Reg		Reg	
0023-SWAN24-008		11/6/02	1040	1	✓	✓	✓	✓	✓	✓											Area B-B2		2' - Reg		Reg	
0023-SWAN24-009		11/6/02	1046	1	✓	✓	✓	✓	✓	✓											Area B-B3		2' - Reg		Reg	
0023-SWAN24-010		11/6/02	1047	1	✓	✓	✓	✓	✓	✓											Area B-B3		2' - Reg		Reg	
0023-SWAN24-011		11/6/02	1050	1	✓	✓	✓	✓	✓	✓											Area B-B3		2' - FD		FD	
RELINQUISHED BY (Signature) <i>Nicholas W. Winkler</i>		DATE 11/6/02	RECEIVED BY (Signature) <i>Heidi E. Giddens</i>		LABORATORY INSTRUCTIONS/COMMENTS										SAMPLING COMMENT: Soil sampling		Do not submit to Laboratory									
COMPANY WJF		TIME 1:35	COMPANY HCL																							
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)		COMPOSITE DESCRIPTION										SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN							
COMPANY		TIME	COMPANY																							
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)												SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN							
COMPANY		TIME	COMPANY																							

NUMBER 04073

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWAMP 24		PURCHASE ORDER NO. 020721 Back 15		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory				
PROJECT LOCATION NAWAPA Soil Bank, CA		PROJECT NO. 1990, 0230												LABORATORY ID (FOR LABORATORY) 02-5896						
SAMPLER NAME Nicholas Wernberg		SAMPLER SIGNATURE <i>Nicholas Wernberg</i>																		
PROJECT CONTACT 140 B. Jankowski		AIRBILL NUMBER 1400108																		
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL 3 4	T Y P E	T A T											LOCATION	DEPTH START END	OC	
0023-SWAMP24-012	11/6/02	1053	1	X	S	06	X											Area B-B4	2'	- Reg
0023-SWAMP24-012	11/6/02	1056	1	Y	S	06	X											Area B-B5	2'	- Reg
0023-SWAMP24-014	11/6/02	1058	1	X	S	06	Y											Area B-B6	2'	- Reg
0023-SWAMP24-015	11/6/02	1101	1	X	S	06	X											Area B-B7	2'	- Reg
0023-SWAMP24-016	11/6/02	1103	1	X	S	06	X											Area B-C1	2'	- Reg
0023-SWAMP24-017	11/6/02	1107	1	Y	S	06	X											Area B-C2	2'	- Reg
0023-SWAMP24-018	11/6/02	1125	1	Y	S	06	X											Area B-C3	2'	- Reg
0023-SWAMP24-019	11/6/02	1128	1	X	S	06	X											Area B-C4	2'	- Reg
0023-SWAMP24-020	11/6/02	1131	1	X	S	06	X											Area B-C5	2'	- Reg
0023-SWAMP24-021	11/6/02	1133	1	X	S	06	X											Area B-C6	2'	- Reg
0023-SWAMP24-022	11/6/02	1134	1	0X	S	06	X											Area B-C6	2'	- Reg
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		LABORATORY INSTRUCTIONS/COMMENTS										SAMPLING COMMENT:		
COMPANY		TIME		COMPANY		TIME												Confirmation		
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		COMPOSITE DESCRIPTION												
COMPANY		TIME		COMPANY		TIME														
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)												
COMPANY		TIME		COMPANY		TIME		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN												
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN												
COMPANY		TIME		COMPANY		TIME														

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-1 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-001 Sample Matrix: Soil Moisture %: 3.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.3		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-002 Lab Sample ID: 02-5896-2 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	13.8		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-003 Lab Sample ID: 02-5896-3 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.2		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-004 Lab Sample ID: 02-5896-4 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 11.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	26.0		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-005 Lab Sample ID: 02-5896-5 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	19.7		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-006 Lab Sample ID: 02-5896-6 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 7.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.8		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-7 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-007 Sample Matrix Soil Moisture %: 6.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	25.8		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-8 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-008 Sample Matrix: Soil Moisture %: 19
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	3.7		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-009 Lab Sample ID: 02-5896-9 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	2.9		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-010 Lab Sample ID: 02-5896-10 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.7			P	02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-11 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-011 Sample Matrix: Soil Moisture %: 5.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.5		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-12 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-012 Sample Matrix: Soil Moisture %: 4.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	5.6		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-13 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-013 Sample Matrix: Soil Moisture %: 7.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	7.5		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-14 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-014 Sample Matrix: Soil Moisture %: 5.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	10.4		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-015 Lab Sample ID: 02-5896-15 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 6.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	73.0		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-16 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-016 Sample Matrix: Soil Moisture %: 2.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	11.4		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Lab Sample ID: 02-5896-17 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-017 Sample Matrix: Soil Moisture %: 3.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	9.0		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-018 Lab Sample ID: 02-5896-18 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 44

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	5.2		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
 Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
 Sample ID: 0023-SWMU24-019 Lab Sample ID: 02-5896-19 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 7.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	21.9		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-020 Lab Sample ID: 02-5896-20 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 9.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	6.2		P		02M2277M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-021 Lab Sample ID: 02-5896-21 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	11.8		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25896 Collected by: Nicholas Weinberger
Sample ID: 0023-SWMU24-022 Lab Sample ID: 02-5896-22 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 11.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	51.3		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/07/2002
Project ID: SWMU 24 Service ID: 25896 Collected by:
Lab Sample ID: 02M2277-MB-01 Received Date: 11/07/2002
Sample ID: 02M2277-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2277M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
 Project ID: SWMU 24 Service ID: 25896 Collected by:
 Lab Sample ID: 02M2280-MB-01 Received Date: 11/08/2002
 Sample ID: 02M2280-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2280M	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Contract No:	Lab Code:	APCL
Case No:		SAS No:	Service ID:	25896
Project ID:	SWMU 24	Project No:	Sample Matrix:	Soil
		Batch No:		
MS Filename:	-	Date Analyzed:	Time Analyzed:	19:29
MSD Filename:	-	Date Analyzed:	Time Analyzed:	19:31
MS Sample No:	0023-SWMU24-020	Sample Lab ID:	Moisture, %	9.8

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	166	6 2	178	103	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
1 EAD	mg/kg	166	177	103	0	20 75-125
# of Out-of-control				0	0	

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
 Case No: SAS No: Service ID: 25896
 Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
 Batch No: 02M2280M
 MS Filename: - Date Analyzed: 110802 Time Analyzed: 11:13
 MSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:15
 MS Sample No: 0023-SWMU24-067 Sample Lab ID: 02-5899-1 Moisture, % 10.7

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	168	14.4	209	116	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	168	210	116	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25896
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2277M
LCS Filename: - Date Analyzed: 110702 Time Analyzed: 19:19
LCSD Filename: - Date Analyzed: 110702 Time Analyzed: 19:21

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	154	103	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	155	103	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25896
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2280M
LCS Filename: - Date Analyzed: 110802 Time Analyzed: 11:01
LCSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:03

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	149	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD REC
LEAD	mg/kg	150	152	101	2	20 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5896
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-5896 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-001	02-5896-1	Soil	X
0023-SWMU24-002	02-5896-2	Soil	X
0023-SWMU24-003	02-5896-3	Soil	X
0023-SWMU24-004	02-5896-4	Soil	X
0023-SWMU24-005	02-5896-5	Soil	X
0023-SWMU24-006	02-5896-6	Soil	X
0023-SWMU24-007	02-5896-7	Soil	X
0023-SWMU24-008	02-5896-8	Soil	X
0023-SWMU24-009	02-5896-9	Soil	X
0023-SWMU24-010	02-5896-10	Soil	X
0023-SWMU24-011	02-5896-11	Soil	X
0023-SWMU24-012	02-5896-12	Soil	X
0023-SWMU24-013	02-5896-13	Soil	X
0023-SWMU24-014	02-5896-14	Soil	X
0023-SWMU24-015	02-5896-15	Soil	X
0023-SWMU24-016	02-5896-16	Soil	X
0023-SWMU24-017	02-5896-17	Soil	X
0023-SWMU24-018	02-5896-18	Soil	X
0023-SWMU24-019	02-5896-19	Soil	X
0023-SWMU24-020	02-5896-20	Soil	X
0023-SWMU24-021	02-5896-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-022	02-5896-22	Soil	X
0023-SWMU24-020MD	02-5896-20MD	Soil	X
0023-SWMU24-020MS	02-5896-20MS	Soil	X
0023-SWMU24-020MSD	02-5896-20MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-010 / 0023-SWMU24-011 and 0023-SWMU24-021 / 0023-SWMU24-022 were field duplicates.

Note 2: Samples 0023-SWMU24-011 and 0023-SWMU24-022 were validated at Level IV All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L Smith, Jean M Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- J - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5896 Lead

SAMPLES: 0023-SWMU24-001, 0023-SWMU24-002, 0023-SWMU24-003, 0023-SWMU24-004, 0023-SWMU24-005, 0023-SWMU24-006, 0023-SWMU24-007, 0023-SWMU24-008, 0023-SWMU24-009, 0023-SWMU24-010, 0023-SWMU24-011, 0023-SWMU24-012, 0023-SWMU24-013, 0023-SWMU24-014, 0023-SWMU24-015, 0023-SWMU24-016, 0023-SWMU24-017, 0023-SWMU24-018, 0023-SWMU24-019, 0023-SWMU24-020, 0023-SWMU24-021, 0023-SWMU24-022

LEAD

SUMMARY

I) General.

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable with qualifications. All applied data qualifiers were based on guideline protocol unless otherwise noted.

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken.

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary.

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recoveries (%R's) of lead were 70% and 124%, respectively, for the CRI standards analyzed on 11/7/02 and 11/8/02, which were outside the 80-120% QC limits. Data qualifications based on CRDL criteria was not required. No action was taken.

III) Blanks:

Lead was detected at 0.002 mg/L to 0.003 mg/L in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken.

V) ICP Serial Dilution Analysis:

The Percent Difference (%D) for lead was 11% for dilution sample 0023-SWMU24-020L, which exceeded the 10% QC limit. All results for lead in the SDG samples, which consisted entirely of positive results, were qualified as estimated (J).

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met. No action was required.

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met. No action was taken.

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met. No action was required.

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-010 / 0023-SWMU24-011 and 0023-SWMU24-021 / 0023-SWMU24-022) were analyzed in this SDG. The Relative Percent Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-010</u>	<u>0023-SWMU24-011</u>	<u>RPD</u>
lead	4.7 mg/kg	4.5 mg/kg	4.2%
<u>Analyte</u>	<u>0023-SWMU24-021</u>	<u>0023-SWMU24-022</u>	<u>RPD</u>
lead	11.8 mg/kg	51.3 mg/kg	125%

The RPD for lead in the second set of field duplicate exceeded the 60% QC limit for soil samples. The results for lead in the two samples were previously qualified based on Serial Dilution criteria. No further action was necessary.

X) Sample Result Calculation / Transcription Verification:

All criteria were met. No action was taken.

XI.) System Performance:

All System Performance criteria were met No action was taken

XII.) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWANAZ 4		PURCHASE ORDER NO. 02072 Task 1		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory			
PROJECT LOCATION NAVWIC/ Salt Pond CA		PROJECT NO. 1990.0221												LABORATORY ID (FOR LABORATORY) 02-5897					
SAMPLER NAME Nicholas Wobenberg		SAMPLER SIGNATURE <i>Nicholas Wobenberg</i>		AIRBILL NUMBER CONFIRM		NO. OF CONTAINER		LEVEL		TYPE		T		LOCATION		DEPTH		QC	
PROJECT CONTACT Lisa Phankasane		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYPE		T		LOCATION		DEPTH		QC	
SAMPLE ID		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYPE		T		LOCATION		DEPTH		QC	
0023-SWAMU24-023	11/6/02	1130	1	X	5	113								Area B-C7	2'	-	Reg		
0023-SWAMU24-024	11/6/02	1235	1	X	5	123								Area B-D1	2'	-	Reg		
0023-SWAMU24-025	11/6/02	1238	1	X	5	123								Area B-DZ-21	2'	-	Reg		
0023-SWAMU24-026	11/6/02	1240	1	X	5	123								Area B-D3-21	2'	-	Reg		
0023-SWAMU24-027	11/6/02	1242	1	X	5	123								Area B-D4-21	2'	-	Reg		
0023-SWAMU24-028	11/6/02	1245	1	X	5	123								Area B-D5-21	2'	-	Reg		
0023-SWAMU24-029	11/6/02	1248	1	X	5	123								Area B-D6-21	2'	-	Reg		
0023-SWAMU24-030	11/6/02	1250	1	X	5	123								Area B-D7-21	2'	-	Reg		
0023-SWAMU24-031	11/6/02	1252	1	X	5	123								Area B-E1-21	2'	-	Reg		
0023-SWAMU24-032	11/6/02	1254	1	X	5	123								Area B-E2-21	2'	-	Reg		
0023-SWAMU24-033	11/6/02	1255	1	X	5	123								Area B-E2-21	2'	-	FD		
LABORATORY INSTRUCTIONS/COMMENTS														SAMPLING COMMENT: Confirmation Soil Samples					
RELINQUISHED BY (Signature) <i>Nicholas Wobenberg</i>		DATE 11/6/02		RECEIVED BY (Signature) <i>Ryan Clavell</i>		DATE 11/6/02													
COMPANY FW		TIME 12:35		COMPANY		TIME													
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		COMPOSITE DESCRIPTION											
COMPANY		TIME		COMPANY		TIME													
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)											
COMPANY		TIME		COMPANY		TIME		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
COMPANY		TIME		COMPANY		TIME													

NUMBER **04074**

CHAIN-OF-CUSTODY RECORD

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED										LABORATORY NAME		Project Information Section Do not submit to Laboratory							
PROJECT LOCATION		PROJECT NO.		SAMPLER SIGNATURE		AIRBILL NUMBER		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC	
SAMPLER NAME		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC	
PROJECT CONTACT		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC	
SWAN 24		02/07/02		1257		1		Y		S		1		Y		S		Area B-E3		2'		Reg	
SWAN 20-035		11/6/02		1259		1		Y		S		1		Y		S		Area B-E4		2'		Reg	
SWAN 21-036		11/6/02		1301		1		Y		S		1		Y		S		Area B-E5		2'		Reg	
SWAN 22-037		11/6/02		1304		1		Y		S		1		Y		S		Area B-E6		2'		Reg	
SWAN 23-038		11/6/02		1306		1		Y		S		1		Y		S		Area B-E7		2'		Reg	
SWAN 24-039		11/6/02		1308		1		Y		S		1		Y		S		Area B-E1		2'		Reg	
SWAN 25-040		11/6/02		1310		1		Y		S		1		Y		S		Area B-F2		2'		Reg	
SWAN 26-041		11/6/02		1312		1		Y		S		1		Y		S		Area B-F3		2'		Reg	
SWAN 27-042		11/6/02		1315		1		Y		S		1		Y		S		Area B-F4		2'		Reg	
SWAN 28-043		11/6/02		1318		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 29-044		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 30-045		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 31-046		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 32-047		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 33-048		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 34-049		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 35-050		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 36-051		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 37-052		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 38-053		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 39-054		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 40-055		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 41-056		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 42-057		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 43-058		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 44-059		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 45-060		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 46-061		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 47-062		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 48-063		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 49-064		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 50-065		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 51-066		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 52-067		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 53-068		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 54-069		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 55-070		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 56-071		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 57-072		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 58-073		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 59-074		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 60-075		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 61-076		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 62-077		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 63-078		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 64-079		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 65-080		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 66-081		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 67-082		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 68-083		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 69-084		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 70-085		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 71-086		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 72-087		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 73-088		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 74-089		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 75-090		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 76-091		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 77-092		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 78-093		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 79-094		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 80-095		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 81-096		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 82-097		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 83-098		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 84-099		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 85-100		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 86-101		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 87-102		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 88-103		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 89-104		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 90-105		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 91-106		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 92-107		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 93-108		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 94-109		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 95-110		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 96-111		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 97-112		11/6/02		1319		1		Y		S		1		Y		S		Area B-F5		2'		Reg	
SWAN 98-113		11/6/02		131																			

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-023 Lab Sample ID: 02-5897-1 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 10.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	36.2		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-024 Lab Sample ID: 02-5897-2 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 9.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	10.5		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-3 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-025 Sample Matrix: Soil Moisture %: 4.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	5.9		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-4 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-026 Sample Matrix: Soil Moisture %: 4.3
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	15.1		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-027 Lab Sample ID: 02-5897-5 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	6.3		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-028 Lab Sample ID: 02-5897-6 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 2.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	5.2		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990.023D	Collection Date:	11/06/2002
Project ID:	SWMU 24	Service ID:	25897	Collected by:	Nick Weinberger
		Lab Sample ID:	02-5897-7	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-029	Sample Matrix	Soil	Moisture %:	11.4
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	22.3		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL.
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-030 Lab Sample ID: 02-5897-8 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 43

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	3.1		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/06/2002
Project ID:	SWMU 24	Service ID:	25897	Collected by:	Nick Weinberger
		Lab Sample ID:	02-5897-9	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-031	Sample Matrix	Soil	Moisture %:	11.9
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	6.9		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-032 Lab Sample ID: 02-5897-10 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 8.7

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	26.7		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990.023D	Collection Date:	11/06/2002
Project ID:	SWMU 24	Service ID:	25897	Collected by:	Nick Weinberger
		Lab Sample ID:	02-5897-11	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-033	Sample Matrix	Soil	Moisture %:	8.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	19.6		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier:	U - Not Detected or less than IDL	B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier:	N - Spike recovery out of control	* - Duplicate analysis out of control
	W - Post digestion spike for GFAA out of control	E - Serial dilution difference out of control
M Qualifier:	P - ICP A - FLAA F - GFAA	CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-034 Lab Sample ID: 02-5897-12 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 9.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	5.0		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-035 Lab Sample ID: 02-5897-13 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 7.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	5.4		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-14 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-036 Sample Matrix: Soil Moisture %: 12.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	26.3		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-037 Lab Sample ID: 02-5897-15 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	3.2		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/06/2002
Project ID:	SWMU 24	Service ID:	25897	Collected by:	Nick Weinberger
		Lab Sample ID:	02-5897-16	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-038	Sample Matrix	Soil	Moisture %:	4.4
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	6.8		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-039 Lab Sample ID: 02-5897-17 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	50.6		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-040 Lab Sample ID: 02-5897-18 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 8.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	15.0		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-19 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-041 Sample Matrix: Soil Moisture %: 17.4
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	7.3		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-20 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-042 Sample Matrix: Soil Moisture %: 14.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	7.5		P		02M2275L	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-21 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-043 Sample Matrix: Soil Moisture %: 15.9
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	71.9		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25897 Collected by: Nick Weinberger
Lab Sample ID: 02-5897-22 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-044 Sample Matrix: Soil Moisture %: 14.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	48.3		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: SWMU 24 Service ID: 25897 Collected by:
Lab Sample ID: 02M2275-MB-01 Received Date: 11/07/2002
Sample ID: 02M2275-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2275L	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: SWMU 24 Service ID: 25897 Collected by:
Lab Sample ID: 02M2280-MB-01 Received Date: 11/08/2002
Sample ID: 02M2280-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2280M	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25897
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2275L
MS Filename: - Date Analyzed: 110702 Time Analyzed: 16:06
MSD Filename: - Date Analyzed: 110702 Time Analyzed: 16:08
MS Sample No: 0023-SWMU24-040 Sample Lab ID: 02-5897-18 Moisture, % 8.5

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	164	15.0	191	107	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	164	191	107	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values.

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

74043

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
 Case No: SAS No: Service ID: 25897
 Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
 Batch No: 02M2280M
 MS Filename: - Date Analyzed: 110802 Time Analyzed: 11:13
 MSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:15
 MS Sample No: 0023-SWMU24-067 Sample Lab ID: 02-5899-1 Moisture, % 10

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	168	14.4	209	116	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	168	210	116	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25897
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2275L
LCS Filename: - Date Analyzed: 110702 Time Analyzed: 15:53
LCSD Filename: - Date Analyzed: 110702 Time Analyzed: 15:55

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	163	109	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	161	107	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25897
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2280M
LCS Filename: - Date Analyzed: 110802 Time Analyzed: 11:01
ICSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:03

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	149	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	ICSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	152	101	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5897
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994

SAMPLE MATRIX: Soil
TYPES OF ANALYSIS: Lead

SDG NUMBER: 02-5897 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-023	02-5897-1	Soil	X
0023-SWMU24-024	02-5897-2	Soil	X
0023-SWMU24-025	02-5897-3	Soil	X
0023-SWMU24-026	02-5897-4	Soil	X
0023-SWMU24-027	02-5897-5	Soil	X
0023-SWMU24-028	02-5897-6	Soil	X
0023-SWMU24-029	02-5897-7	Soil	X
0023-SWMU24-030	02-5897-8	Soil	X
0023-SWMU24-031	02-5897-9	Soil	X
0023-SWMU24-032	02-5897-10	Soil	X
0023-SWMU24-033	02-5897-11	Soil	X
0023-SWMU24-034	02-5897-12	Soil	X
0023-SWMU24-035	02-5897-13	Soil	X
0023-SWMU24-036	02-5897-14	Soil	X
0023-SWMU24-037	02-5897-15	Soil	X
0023-SWMU24-038	02-5897-16	Soil	X
0023-SWMU24-039	02-5897-17	Soil	X
0023-SWMU24-040	02-5897-18	Soil	X
0023-SWMU24-041	02-5897-19	Soil	X
0023-SWMU24-042	02-5897-20	Soil	X
0023-SWMU24-043	02-5897-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-044	02-5897-22	Soil	X
0023-SWMU24-040MD	02-5897-18MD	Soil	X
0023-SWMU24-040MS	02-5897-18MS	Soil	X
0023-SWMU24-040MSD	02-5897-18MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-032 / 0023-SWMU24-033 and 0023-SWMU24-043 / 0023-SWMU24-044 were field duplicates

Note 2: Samples 0023-SWMU24-033 and 0023-SWMU24-044 were validated at Level IV All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- U) - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note. All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5897 Lead

SAMPLES: 0023-SWMU24-023, 0023-SWMU24-024, 0023-SWMU24-025, 0023-SWMU24-026, 0023-SWMU24-027, 0023-SWMU24-028, 0023-SWMU24-029, 0023-SWMU24-030, 0023-SWMU24-031, 0023-SWMU24-032, 0023-SWMU24-033, 0023-SWMU24-034, 0023-SWMU24-035, 0023-SWMU24-036, 0023-SWMU24-037, 0023-SWMU24-038, 0023-SWMU24-039, 0023-SWMU24-040, 0023-SWMU24-041, 0023-SWMU24-042, 0023-SWMU24-043, 0023-SWMU24-044

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recovery (%R) of lead was 124% for the CRI standard analyzed on 11/8/02, which exceeded the 80-120% QC limits Data qualifications based on CRDL criteria was not required No action was taken

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) in the continuing calibration blanks (CCBs)

Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG All LCS Recovery criteria were met No action was required

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met No action was taken

VIII) Matrix Spike - Matrix Spike Duplicate (MS - MSD):

All MS - MSD criteria were met No action was required

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-032 / 0023-SWMU24-033 and 0023-SWMU24-043 - 0023-SWMU24-044) were analyzed in this SDG The Relative Percent Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-032</u>	<u>0023-SWMU24-033</u>	<u>RPD</u>
lead	26.7 mg/kg	19.6 mg/kg	31%
<u>Analyte</u>	<u>0023-SWMU24-043</u>	<u>0023-SWMU24-044</u>	<u>RPD</u>
lead	71.9 mg/kg	48.3 mg/kg	39%

Both RPDs for lead were within the 60% QC limit for soil samples No action was necessary

X) Sample Result Calculation Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

NUMBER

04015

CHAIN-OF-CUSTODY RECORD

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED										LABORATORY NAME		Project Information Section													
PROJECT LOCATION		PROJECT NO.		SAMPLER SIGNATURE		AIRBILL NUMBER		TIME COLLECTED		DATE COLLECTED		SAMPLE ID		TIME		NO. OF CONTAINER		LEVEL		TYP		T		LOCATION		DEPTH		QC	
SAMPLER NAME		SAMPLER SIGNATURE		AIRBILL NUMBER		TIME COLLECTED		DATE COLLECTED		SAMPLE ID		TIME		NO. OF CONTAINER		LEVEL		TYP		T		T		LOCATION		DEPTH		QC	
SWANW21		020721 Test 15		1970:0231D		1321		11/16/02		0023-SWANW21-045		1321		1		X		S		45		45		Area B-F6		2'		Reg	
NAUWPA San Diego, CA		1970:0231D		1323		11/16/02		0023-SWANW21-046		1323		1		Y		X		S		45		45		Area B-F7		2'		Reg	
Nick Wernberger		1325		11/16/02		0023-SWANW21-047		1325		1		X		Y		X		S		45		45		Area B-G3		3.5'		Reg	
Lisa Beckenbach		1327		11/16/02		0023-SWANW21-048		1327		1		X		Y		X		S		45		45		Area B-G4		3.9'		Reg	
		1341		11/16/02		0023-SWANW21-049		1341		1		Y		Y		X		S		45		45		Area B-A1N		-		Reg	
		1343		11/16/02		0023-SWANW21-050		1343		1		Y		Y		X		S		45		45		Area B-A2N		-		Reg	
		1345		11/16/02		0023-SWANW21-051		1345		1		Y		Y		X		S		45		45		Area B-A3N		-		Reg	
		1347		11/16/02		0023-SWANW21-052		1347		1		Y		Y		X		S		45		45		Area B-A4N		-		Reg	
		1349		11/16/02		0023-SWANW21-053		1349		1		Y		Y		X		S		45		45		Area B-A5N		-		Reg	
		1351		11/16/02		0023-SWANW21-054		1351		1		Y		Y		X		S		45		45		Area B-A6N		-		Reg	
		1352		11/16/02		0023-SWANW21-055		1352		1		X		Y		X		S		45		45		Area B-A6N		-		Reg	
RELINQUISHED BY (Signature)		DATE		TIME		RECEIVED BY (Signature)		DATE		TIME		RECEIVED BY (Signature)		DATE		TIME		RECEIVED BY (Signature)		DATE		TIME		RECEIVED BY (Signature)		DATE		TIME	
COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME	
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COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME		COMPANY		DATE		TIME	

SAMPLING COMMENT:
 Confirmation
 Soil Samples

CHAIN-OF-CUSTODY RECORD

NUMBER 04076

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED										LABORATORY NAME		Project Information Section							
PROJECT LOCATION		PROJECT NO.		SAMPLER SIGNATURE		AIRBILL NUMBER		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC	
SAMPLER NAME		SAMPLER SIGNATURE		AIRBILL NUMBER		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC			
PROJECT CONTACT		SAMPLER SIGNATURE		AIRBILL NUMBER		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYP		LOCATION		DEPTH		OC			
SUMMIT 201		020721-0410		1990.0231		11/1/02		13561		1		Y		S		Area B-A7N Side wall		-		Reg			
NAUWAU Seal Beach, CA		1990.0231		11/1/02		1357		1		Y		S		S		Area B-A1E Side wall		-		Reg			
Nick Wheeler		1990.0231		11/1/02		1359		1		Y		S		S		Area B-B1E Side wall		-		Reg			
Lisa Brennan sks		1990.0231		11/1/02		1401		1		Y		S		S		Area B-C1E Side wall		-		Reg			
0023-SUMMIT-056		11/1/02		1403		1		Y		S		S		S		Area B-D1E Side wall		-		Reg			
0023-SUMMIT-057		11/1/02		1407		1		Y		S		S		S		Area B-E1E Side wall		-		Reg			
0023-SUMMIT-058		11/1/02		1409		1		Y		S		S		S		Area B-F1E Side wall		-		Reg			
0023-SUMMIT-059		11/1/02		1411		1		Y		S		S		S		Area B-G1E Side wall		-		Reg			
0023-SUMMIT-060		11/1/02		1413		1		Y		S		S		S		Area B-H1E Side wall		-		Reg			
0023-SUMMIT-061		11/1/02		1414		1		Y		S		S		S		Area B-I1E Side wall		-		Reg			
0023-SUMMIT-062		11/1/02		1415		1		Y		S		S		S		Area B-J1E Side wall		-		Reg			
0023-SUMMIT-063		11/1/02		1416		1		Y		S		S		S		Area B-K1E Side wall		-		Reg			
0023-SUMMIT-064		11/1/02		1417		1		Y		S		S		S		Area B-L1E Side wall		-		Reg			
0023-SUMMIT-065		11/1/02		1418		1		Y		S		S		S		Area B-M1E Side wall		-		Reg			
0023-SUMMIT-066		11/1/02		1419		1		Y		S		S		S		Area B-N1E Side wall		-		Reg			
RELINQUISHED BY (Signature)		DATE		TIME		COMPANY		RECEIVED BY (Signature)		DATE		TIME		COMPANY		COMPOSITE DESCRIPTION		SAMPLING COMMENT:		Confirmation			
RELINQUISHED BY (Signature)		DATE		TIME		COMPANY		RECEIVED BY (Signature)		DATE		TIME		COMPANY		COMPOSITE DESCRIPTION		SAMPLING COMMENT:		Soil/Samples			
RELINQUISHED BY (Signature)		DATE		TIME		COMPANY		RECEIVED BY (Signature)		DATE		TIME		COMPANY		COMPOSITE DESCRIPTION		SAMPLING COMMENT:					
RELINQUISHED BY (Signature)		DATE		TIME		COMPANY		RECEIVED BY (Signature)		DATE		TIME		COMPANY		COMPOSITE DESCRIPTION		SAMPLING COMMENT:					
RELINQUISHED BY (Signature)		DATE		TIME		COMPANY		RECEIVED BY (Signature)		DATE		TIME		COMPANY		COMPOSITE DESCRIPTION		SAMPLING COMMENT:					

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-045 Lab Sample ID: 02-5898-1 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Mthod
LEAD	7439-92-1	mg/kg	0.35	15.9		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-2 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-046 Sample Matrix: Soil Moisture %: 12.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	133		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL = PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-047 Lab Sample ID: 02-5898-3 Received Date: 11/01/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 14.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	8.8		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-048 Lab Sample ID: 02-5898-4 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 11.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	8.7		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-049 Lab Sample ID: 02-5898-5 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 10

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	6.6		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-6 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-050 Sample Matrix: Soil Moisture %: 3.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	7.8		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID 02-5898-7 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-051 Sample Matrix Soil Moisture %: 3.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	10.3		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No 1990-023D Collection Date: 11/06/2002
 Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
 Lab Sample ID 02-5898-8 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-052 Sample Matrix Soil Moisture %: 2.1
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	530		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less thanIDL B - Less than RL (PQL, EQL or CRDL) but greater thanIDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-053 Lab Sample ID: 02-5898-9 Received Date: 11/01/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 2.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	1080		P		02M22:6M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-10 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-054 Sample Matrix: Soil Moisture %: 4.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	65.7		P		02M2216M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-055 Lab Sample ID: 02-5898-11 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	2590		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-12 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-056 Sample Matrix: Soil Moisture %: 4.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	90.0		P		02M12276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-13 Received Date: 11/01/2002
Sample ID: 0023-SWMU24-057 Sample Matrix: Soil Moisture %: 27
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	39.8		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990-023D	Collection Date:	11/06/2002
Project ID:	SWMU 24	Service ID:	25898	Collected by	Nick Weinberger
		Lab Sample ID:	02-5898-11	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-058	Sample Matrix	Soil	Moisture %	5.7
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	21.6		P		02M2276M	11/07/02	11/07/02	1	6010B

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-059 Lab Sample ID: 02-5898-15 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 0.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	184		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-060 Lab Sample ID: 02-5898-16 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 0.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	315		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID 25898 Collected by Nick Weinberger
Sample ID: 0023-SWMU24-061 Lab Sample ID: 02-5898-17 Received Date 11/07/2002
Sample Type: Field Sample Sample Matrix Soil Moisture %: 1.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	68.8		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-18 Received Date: 11/06/2002
Sample ID: 0023-SWMU24-062 Sample Matrix: Soil Moisture %: 77
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	33.3		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by Nick Weinberger
Lab Sample ID: 02-5898-19 Received Date 11/07/2002
Sample ID: 0023-SWMU24-063 Sample Matrix Soil Moisture %: 5.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	25.0		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-064 Lab Sample ID: 02-5898-20 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	26.2		P		02M2276M	11/07/02	11/07/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	11.4		P		02M2280M	11/08/02	11/08/02	1	6010B

APCI Data Highway to Foster Wheeler Environmental Corp 11/11/2002 20:40 (p22) N 25898 File FORM-1 Page: 1

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25898 Collected by: Nick Weinberger
Lab Sample ID: 02-5898-22 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-066 Sample Matrix: Soil Moisture %: 8.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	132		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No. 1990-023D Collection Date: 11/07/2002
Project ID: SWMU 24 Service ID: 25898 Collected by:
Lab Sample ID: 02M2276-MB-01 Received Date: 11/07/2002
Sample ID: 02M2276-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2276M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990-023D Collection Date: 11/08/2002
Project ID: SWMU 24 Service ID: 25898 Collected by:
Lab Sample ID: 02M2280-MB-01 Received Date: 11/08/2002
Sample ID: 02M2280-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2280M	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25898
Project ID: SWMU 24 Project No: 1990-023D Sample Matrix: Soil
Batch No: 02M2276M
MS Filename: - Date Analyzed: 110702 Time Analyzed: 17:40
MSD Filename: - Date Analyzed: 110702 Time Analyzed: 17:43
MS Sample No: 0023-SWMU24-060 Sample Lab ID: 02-5898-16 Moisture, % 0.6

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	151	315	326	7 *	75-125
# of Out-of-control					1	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	151	325	7 *	0	20	75-125
# of Out-of-control				1	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25898
Project ID: SWMU 24 Project No: 1990-023D Sample Matrix: Soil
Batch No: 02M2280M
MS Filename: - Date Analyzed: 110802 Time Analyzed: 11:13
MSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:15
MS Sample No: 0023-SWMU24-067 Sample Lab ID: 02-5899-1 Moisture, % 10.7

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	168	14.4	209	116	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	168	210	116	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25898
Project ID: SWMU 24 Project No: 1990-023D Sample Matrix: Soil
Batch No: 02M2280M
ICS Filename: - Date Analyzed: 110802 Time Analyzed: 11.01
ICSD Filename: - Date Analyzed: 110802 Time Analyzed: 11.03

Spiked Components	Unit	Spike Added	Concentration		ICS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	149	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	ICSD Concentration	ICSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	152	101	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

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FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name Foster Wheeler Environmental Corp Contract No. Lab Code: APCI
Case No SAS No Service ID 25898
Project ID SWMU 24 Project No 1990-023D Sample Matrix Soil
Batch No 02M2276M
LCS Filename: - Date Analyzed: 110702 Time Analyzed: 11:25
LCSD Filename: - Date Analyzed: 110702 Time Analyzed: 11:28

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	157	105	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	157	105	0	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp.
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5898
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994

SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead

SDG NUMBER: 02-5898 (Level III - IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-045	02-5898-1	Soil	X
0023-SWMU24-046	02-5898-2	Soil	X
0023-SWMU24-047	02-5898-3	Soil	X
0023-SWMU24-048	02-5898-4	Soil	X
0023-SWMU24-049	02-5898-5	Soil	X
0023-SWMU24-050	02-5898-6	Soil	X
0023-SWMU24-051	02-5898-7	Soil	X
0023-SWMU24-052	02-5898-8	Soil	X
0023-SWMU24-053	02-5898-9	Soil	X
0023-SWMU24-054	02-5898-10	Soil	X
0023-SWMU24-055	02-5898-11	Soil	X
0023-SWMU24-056	02-5898-12	Soil	X
0023-SWMU24-057	02-5898-13	Soil	X
0023-SWMU24-058	02-5898-14	Soil	X
0023-SWMU24-059	02-5898-15	Soil	X
0023-SWMU24-060	02-5898-16	Soil	X
0023-SWMU24-061	02-5898-17	Soil	X
0023-SWMU24-062	02-5898-18	Soil	X
0023-SWMU24-063	02-5898-19	Soil	X
0023-SWMU24-064	02-5898-20	Soil	X
0023-SWMU24-065	02-5898-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-066	02-5898-22	Soil	X
0023-SWMU24-060MD	02-5898-60MD	Soil	X
0023-SWMU24-060MS	02-5898-60MS	Soil	X
0023-SWMU24-060MSD	02-5898-60MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-054 / 0023-SWMU24-055 and 0023-SWMU24-065 / 0023-SWMU24-066 were field duplicates

Note 2: Samples 0023-SWMU24-055 and 0023-SWMU24-066 were validated at Level IV All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- J - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5898 Lead

SAMPLES: 0023-SWMU24-045, 0023-SWMU24-046, 0023-SWMU24-047, 0023-SWMU24-048,
0023-SWMU24-049, 0023-SWMU24-050, 0023-SWMU24-051, 0023-SWMU24-052,
0023-SWMU24-053, 0023-SWMU24-054, 0023-SWMU24-055, 0023-SWMU24-056,
0023-SWMU24-057, 0023-SWMU24-058, 0023-SWMU24-059, 0023-SWMU24-060,
0023-SWMU24-061, 0023-SWMU24-062, 0023-SWMU24-063, 0023-SWMU24-064,
0023-SWMU24-065, 0023-SWMU24-066

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable with qualifications. All applied data qualifiers were based on guideline protocol unless otherwise noted.

MAJOR ISSUES

No major problems were observed in this SDG.

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken.

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary.

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recoveries (%R's) of lead were 70% and 124%, respectively, for the CRI standards analyzed on 11-7-02 and 11-8-02, which were outside the 80-120% QC limits. Data qualifications based on CRDL criteria was not required. No action was taken.

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken.

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met. No action was necessary.

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met. No action was required.

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met. No action was taken.

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

The Percent Recoveries (%R's) were 7% each for lead in spiked samples 0023-SWMU24-060MS and 0023-SWMU24-060MSD, which were below the 75-125% QC limits. Since the low %R's were due to MS / MSD dilution, and the post digestion recoveries were within QC limits, no action was required.

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-054 / 0023-SWMU24-055 and 0023-SWMU24-065 / 0023-SWMU24-066) were analyzed in this SDG. The Relative Percent Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-054</u>	<u>0023-SWMU24-055</u>	<u>RPD</u>
lead	65.7 mg/kg	2590 mg/kg	185%
<u>Analyte</u>	<u>0023-SWMU24-065</u>	<u>0023-SWMU24-066</u>	<u>RPD</u>
lead	11.4 mg/kg	132 mg/kg	168%

Both RPDs for lead in the two sets of field duplicates exceeded the 60% QC limit for soil samples. The detections of lead in the four samples were qualified as estimated (J).

X) Sample Result Calculation / Transcription Verification:

All criteria were met. No action was taken.

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

NUMBER 04077

CHAIN-OF-CUSTODY RECORD

PROJECT NAME <i>SWMU 26</i>		PURCHASE ORDER NO. <i>02-58999</i>		ANALYSES REQUIRED										LABORATORY NAME <i>APCL</i>		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION <i>NAVALPC Salt Pond, CA</i>		PROJECT NO. <i>1990-0231</i>												LABORATORY ID (FOR LABORATORY)			
SAMPLER NAME <i>Robert W. Kowalski</i>		SAMPLER SIGNATURE <i>[Signature]</i>												COMMENTS <i>02-58999</i>			
PROJECT CONTACT <i>W. Kowalski</i>		AIRBILL NUMBER <i>1000000</i>															
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL		T Y P E			T A T			LOCATION	DEPTH		QC		
				1	2	S	U	P	E	T	A		T	START		END	
001- SWMU26-067	11/6/02	1415	1	X		S	U	P	E				Area B-635 Side wall		Reg		
002- SWMU26-068	11/6/02	1415	1	X		S	U	P	E				Area B-645 Side wall		Reg		
003- SWMU26-069	11/6/02	1420	1	X		S	U	P	E				Area B-64N Side wall		Reg		
004- SWMU26-070	11/6/02	1422	1	X		S	U	P	E				Area B-655 Side wall		Reg		
005- SWMU26-071	11/6/02	1424	1	X		S	U	P	E				Area B-665 Side wall		Reg		
006- SWMU26-072	11/6/02	1426	1	X		S	U	P	E				Area B-675 Side wall		Reg		
007- SWMU26-073	11/6/02	1428	1	X		S	U	P	E				Area B-685 Side wall		Reg		
008- SWMU26-074	11/6/02	1430	1	X		S	U	P	E				Area B-695 Side wall		Reg		
009- SWMU26-075	11/6/02	1432	1	X		S	U	P	E				Area B-705 Side wall		Reg		
010- SWMU26-076	11/6/02	1434	1	X		S	U	P	E				Area B-715 Side wall		Reg		
011- SWMU26-077	11/6/02	1435	1	X		S	U	P	E				Area B-725 Side wall		Reg		
RELINQUISHED BY (Signature) <i>[Signature]</i>		DATE <i>11/6/02</i>	RECEIVED BY (Signature) <i>[Signature]</i>										LABORATORY INSTRUCTIONS/COMMENTS		SAMPLING COMMENT: <i>Confirmation Soil Samples</i>		
COMPANY <i>FW</i>	TIME <i>1735</i>	COMPANY <i>APCL</i>															
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)														
COMPANY	TIME	COMPANY															
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)														
COMPANY	TIME	COMPANY															
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)														
COMPANY	TIME	COMPANY															

CHAIN-OF-CUSTODY RECORD

[illegible]

Project Information
Section
Do not submit to
Laboratory

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp	Project No: 1990 023D	Collection Date: 11/06/2002
Project ID: SWMU 24	Service ID: 25899	Collected by: Nick Weinberger
	Lab Sample ID: 02-5899-1	Received Date: 11/07/2002
Sample ID: 0023-SWMU24-067	Sample Matrix: Soil	Moisture %: 10.1
Sample Type: Field Sample		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	14.4		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-068 Lab Sample ID: 02-5899-2 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 7.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	21.3		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-069 Lab Sample ID: 02-5899-3 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 15.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	10.3		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-070 Lab Sample ID: 02-5899-4 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 11.7

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	8.5		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Lab Sample ID: 02-5899-5 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-071 Sample Matrix: Soil Moisture %: 7.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	75.2		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-072 Lab Sample ID: 02-5899-6 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	29.2		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Lab Sample ID: 02-5899-7 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-073 Sample Matrix: Soil Moisture %: 5.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	20.5		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-074 Lab Sample ID: 02-5899-8 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 9.6

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	774		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Lab Sample ID: 02-5899-9 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-075 Sample Matrix: Soil Moisture %: 2.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	14.4		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-076 Lab Sample ID: 02-5899-10 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 8.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	312		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Sample ID: 0023-SWMU24-077 Lab Sample ID: 02-5899-11 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 7.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	215		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Lab Sample ID: 02-5899-12 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-078 Sample Matrix: Soil Moisture %: 2.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	9.7		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
Lab Sample ID: 02-5899-13 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-079 Sample Matrix: Soil Moisture %: 2.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	166		P		02M2280M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
 Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
 Lab Sample ID: 02-5899-14 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-080 Sample Matrix: Soil Moisture %: 8.8
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.5	6.8		P		02M2274M	11/07/02	11/07/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.33	3.7		P		02M2274M	11/07/02	11/07/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	73.8		P		02M2274M	11/07/02	11/07/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	<0.22	U	P		02M2274M	11/07/02	11/07/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	2.3		P		02M2274M	11/07/02	11/07/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.55	13.6		P		02M2274M	11/07/02	11/07/02	1	6010B
COBALT	7440-48-4	mg/kg	0.55	7.3		P		02M2274M	11/07/02	11/07/02	1	6010B
COPPER	7440-50-8	mg/kg	0.55	29.2		P		02M2274M	11/07/02	11/07/02	1	6010B
LEAD	7439-92-1	mg/kg	0.33	1010		P		02M2274M	11/07/02	11/07/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.024	J	CV		02M2283H	11/08/02	11/08/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	0.25		P		02M2274M	11/07/02	11/07/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.33	9.7		P		02M2274M	11/07/02	11/07/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.55	0.81		P		02M2274M	11/07/02	11/07/02	1	6010B
SILVER	7440-22-4	mg/kg	0.55	<0.55	U	P		02M2274M	11/07/02	11/07/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.55	<0.55	U	P		02M2274M	11/07/02	11/07/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.55	28.4		P		02M2274M	11/07/02	11/07/02	1	6010B
ZINC	7440-66-6	mg/kg	0.55	60.3		P		02M2274M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/06/2002
 Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
 Lab Sample ID: 02-5899-15 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-081 Sample Matrix: Soil Moisture %: 10.6
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.6	1.5	J	P		02M2274M	11/07/02	11/07/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.34	2.7		P		02M2274M	11/07/02	11/07/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	116		P		02M2274M	11/07/02	11/07/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	<0.22	U	P		02M2274M	11/07/02	11/07/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	0.66		P		02M2274M	11/07/02	11/07/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.56	15.8		P		02M2274M	11/07/02	11/07/02	1	6010B
COBALT	7440-48-4	mg/kg	0.56	8.6		P		02M2274M	11/07/02	11/07/02	1	6010B
COPPER	7440-50-8	mg/kg	0.56	23.5		P		02M2274M	11/07/02	11/07/02	1	6010B
LEAD	7439-92-1	mg/kg	0.34	60.8		P		02M2274M	11/07/02	11/07/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.050	J	CV		02M2283H	11/08/02	11/08/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	<0.22	U	P		02M2274M	11/07/02	11/07/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.34	11.3		P		02M2274M	11/07/02	11/07/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.56	<0.56	U	P		02M2274M	11/07/02	11/07/02	1	6010B
SILVER	7440-22-4	mg/kg	0.56	<0.56	U	P		02M2274M	11/07/02	11/07/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.56	<0.56	U	P		02M2274M	11/07/02	11/07/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.56	32.9		P		02M2274M	11/07/02	11/07/02	1	6010B
ZINC	7440-66-6	mg/kg	0.56	55.9		P		02M2274M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/06/2002
 Project ID: SWMU 24 Service ID: 25899 Collected by: Nick Weinberger
 Sample ID: 0023-SWMU24-082 Lab Sample ID: 02-5899-16 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.7	1.1	J	P		02M2274M	11/07/02	11/07/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.34	3.8		P		02M2274M	11/07/02	11/07/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	86.9		P		02M2274M	11/07/02	11/07/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.23	<0.23	U	P		02M2274M	11/07/02	11/07/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.23	0.95		P		02M2274M	11/07/02	11/07/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.57	17.6		P		02M2274M	11/07/02	11/07/02	1	6010B
COBALT	7440-48-4	mg/kg	0.57	9.7		P		02M2274M	11/07/02	11/07/02	1	6010B
COPPER	7440-50-8	mg/kg	0.57	23.8		P		02M2274M	11/07/02	11/07/02	1	6010B
LEAD	7439-92-1	mg/kg	0.34	163		P		02M2274M	11/07/02	11/07/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.23	0.032	J	CV		02M2283H	11/08/02	11/08/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.23	<0.23	U	P		02M2274M	11/07/02	11/07/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.34	12.4		P		02M2274M	11/07/02	11/07/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.57	<0.57	U	P		02M2274M	11/07/02	11/07/02	1	6010B
SILVER	7440-22-4	mg/kg	0.57	<0.57	U	P		02M2274M	11/07/02	11/07/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.57	<0.57	U	P		02M2274M	11/07/02	11/07/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.57	36.7		P		02M2274M	11/07/02	11/07/02	1	6010B
ZINC	7440-66-6	mg/kg	0.57	67.6		P		02M2274M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: SWMU 24 Service ID: 25899 Collected by:
Lab Sample ID: 02M2280-MB-01 Received Date: 11/08/2002
Sample ID: 02M2280-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2280M	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: SWMU 24 Service ID: 25899 Collected by:
 Lab Sample ID: 02M2274-MB-01 Received Date: 11/07/2002
 Sample ID: 02M2274-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5	< 5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.3	< 0.3	U	P		02M2274M	11/07/02	11/07/02	1	6010B
BARIUM	7440-39-3	mg/kg	1	< 1	U	P		02M2274M	11/07/02	11/07/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.2	< 0.2	U	P		02M2274M	11/07/02	11/07/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.2	< 0.2	U	P		02M2274M	11/07/02	11/07/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.5	0.033	J	P		02M2274M	11/07/02	11/07/02	1	6010B
COBALT	7440-48-4	mg/kg	0.5	0.032	J	P		02M2274M	11/07/02	11/07/02	1	6010B
COPPER	7440-50-8	mg/kg	0.5	< 0.5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2274M	11/07/02	11/07/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.2	< 0.2	U	CV		02M2283H	11/08/02	11/08/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.2	< 0.2	U	P		02M2274M	11/07/02	11/07/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.3	0.061	J	P		02M2274M	11/07/02	11/07/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.5	< 0.5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
SILVER	7440-22-4	mg/kg	0.5	< 0.5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.5	< 0.5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.5	< 0.5	U	P		02M2274M	11/07/02	11/07/02	1	6010B
ZINC	7440-66-6	mg/kg	0.5	0.053	J	P		02M2274M	11/07/02	11/07/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25899
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2283H
MS Filename: - Date Analyzed: 110802 Time Analyzed: 15:44
MSD Filename: - Date Analyzed: 110802 Time Analyzed: 15:45
MS Sample No: 0023-SWMU24-080 Sample Lab ID: 02-5899-14 Moisture, % 8.8

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
MERCURY	mg/kg	0.913	0.024	0.881	94	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
MERCURY	mg/kg	0.913	0.858	91	3	20 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Contract No:	Lab Code:	APCL	
Case No:		SAS No:	Service ID:	25899	
Project ID:	SWMU 24	Project No:	1990 023D	Sample Matrix:	Soil
		Batch No:	02M2280M		
MS Filename:	-	Date Analyzed:	110802	Time Analyzed:	11:13
MSD Filename:	-	Date Analyzed:	110802	Time Analyzed:	11:15
MS Sample No:	0023-SWMU24-067	Sample Lab ID:	02-5899-1	Moisture, %	10.7

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	168	14.4	209	116	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
LEAD	mg/kg	168	210	116	0	20 75-125
# of Out-of-control				0	0	

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments _____

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25899
Project ID SWMU 24 Project No: 1990.023D Sample Matrix: Soil
Batch No: 02M2274M
MS Filename: - Date Analyzed: 110702 Time Analyzed: 15:24
MSD Filename: - Date Analyzed: 110702 Time Analyzed: 15:26
MS Sample No: 0023-SWMU24-080 Sample Lab ID: 02-5899-14 Moisture, % 8.8

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
ANTIMONY	mg/kg	27.4	6.8	73.9	245 *	75-125
ARSENIC	mg/kg	27.4	3.7	31.7	102	75-125
BARIUM	mg/kg	219	73.8	312	109	75-125
BERYLLIUM	mg/kg	11.0	0	10.8	98	75-125
CADMIUM	mg/kg	13.7	2.3	16.3	102	75-125
CHROMIUM	mg/kg	54.8	13.6	68.6	100	75-125
COBALT	mg/kg	54.8	7.3	63.9	103	75-125
COPPER	mg/kg	54.8	29.2	118	162 *	75-125
LEAD	mg/kg	164	1010	13300	7190 *	75-125
MOLYBDENUM	mg/kg	110	0.25	109	99	75-125
NICKEL	mg/kg	54.8	9.7	65.3	102	75-125
SELENIUM	mg/kg	27.4	0.81	28.4	101	75-125
SILVER	mg/kg	54.8	0	55.1	101	75-125
THALLIUM	mg/kg	27.4	0	27.1	99	75-125
VANADIUM	mg/kg	110	28.4	139	101	75-125
ZINC	mg/kg	27.4	60.3	85.2	91	75-125
# of Out-of-control					3	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
ANTIMONY	mg/kg	27.4	73.1	242 *	1	20 75-125
ARSENIC	mg/kg	27.4	31.8	103	1	20 75-125
BARIUM	mg/kg	219	310	108	1	20 75-125
BERYLLIUM	mg/kg	11.0	10.7	97	1	20 75-125
CADMIUM	mg/kg	13.7	16.1	101	1	20 75-125
CHROMIUM	mg/kg	54.8	68.3	100	0	20 75-125
COBALT	mg/kg	54.8	63.7	103	0	20 75-125
COPPER	mg/kg	54.8	117	160 *	1	20 75-125
LEAD	mg/kg	164	13200	7430 *	196 *	20 75-125
MOLYBDENUM	mg/kg	110	108	98	1	20 75-125
NICKEL	mg/kg	54.8	65.0	101	1	20 75-125
SELENIUM	mg/kg	27.4	28.3	100	1	20 75-125
SILVER	mg/kg	54.8	55.0	100	1	20 75-125
THALLIUM	mg/kg	27.4	27.0	99	0	20 75-125

73 44

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name:	Foster Wheeler Environmental Corp	Contract No:		Lab Code:	APCL
Case No:		SAS No:		Service ID:	25899
Project ID:	SWMU 24	Project No:	1990 023D	Sample Matrix:	Soil
		Batch No:	02M2214M		
MS Filename:	-	Date Analyzed:	110702	Time Analyzed:	15:24
MSD Filename:	-	Date Analyzed:	110702	Time Analyzed:	15:26
MS Sample No:	0023-SWMU24-080	Sample Lab ID:	02-5899-14	Moisture, %	8.8

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
ANTIMONY	mg/kg	27.4	6.8	73.9	245 *	75-125
ARSENIC	mg/kg	27.4	3.7	31.7	102	75-125
BARIUM	mg/kg	219	73.8	312	109	75-125
BERYLLIUM	mg/kg	11.0	0	10.8	98	75-125
CADMIUM	mg/kg	13.7	2.3	16.3	102	75-125
CHROMIUM	mg/kg	54.8	13.6	68.6	100	75-125
COBALT	mg/kg	54.8	7.3	63.9	103	75-125
COPPER	mg/kg	54.8	29.2	118	162 *	75-125
LEAD	mg/kg	164	1010	13300	7490 *	75-125
MOLYBDENUM	mg/kg	110	0.25	109	99	75-125
NICKEL	mg/kg	54.8	9.7	65.3	102	75-125
SELENIUM	mg/kg	27.4	0.81	28.4	101	75-125
SILVER	mg/kg	54.8	0	55.1	101	75-125
THALLIUM	mg/kg	27.4	0	27.1	99	75-125
VANADIUM	mg/kg	110	28.4	139	101	75-125
ZINC	mg/kg	27.4	60.3	85.2	91	75-125
# of Out-of-control					3	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	27.4	73.1	242 *	1	20	75-125
ARSENIC	mg/kg	27.4	31.8	103	1	20	75-125
BARIUM	mg/kg	219	310	108	1	20	75-125
BERYLLIUM	mg/kg	11.0	10.7	97	1	20	75-125
CADMIUM	mg/kg	13.7	16.1	101	1	20	75-125
CHROMIUM	mg/kg	54.8	68.3	100	0	20	75-125
COBALT	mg/kg	54.8	63.7	103	0	20	75-125
COPPER	mg/kg	54.8	117	160 *	1	20	75-125
LEAD	mg/kg	164	13200	7430 *	196 *	20	75-125
MOLYBDENUM	mg/kg	110	108	98	1	20	75-125
NICKEL	mg/kg	54.8	65.0	101	1	20	75-125
SELENIUM	mg/kg	27.4	28.3	100	1	20	75-125
SILVER	mg/kg	54.8	55.0	100	1	20	75-125
THALLIUM	mg/kg	27.1	27.0	99	0	20	75-125

73 44

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25899
Project ID: SWMU 21 Project No: 1990.023D Sample Matrix: Soil
Batch No: 02M2274M
MS Filename: - Date Analyzed: 110702 Time Analyzed: 15:24
MSD Filename: - Date Analyzed: 110702 Time Analyzed: 15:26
MS Sample No: 0023-SWMU24-080 Sample Lab ID: 02-5899-14 Moisture, % 8.8

Continued

Batch No 02M2274M Method 6010B Page 2

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
VANADIUM	mg/kg	110	138	100	1	20 75-125
ZINC	mg/kg	27.4	84.8	89	2	20 75-125
# of Out-of-control				3	1	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25899
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2283H
ICS Filename: - Date Analyzed: 110802 Time Analyzed: 15:34
ICSD Filename: - Date Analyzed: 110802 Time Analyzed: 15:36

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
MERCURY	mg/kg	0.833	0	0.863	104	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
MERCURY	mg/kg	0.833	0.861	103	1	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25899
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2280M
LCS Filename: - Date Analyzed: 110802 Time Analyzed: 11:01
LCSD Filename: - Date Analyzed: 110802 Time Analyzed: 11:03

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	149	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	152	101	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25899
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2274M
LCS Filename: - Date Analyzed: 110702 Time Analyzed: 15:08
LCSD Filename: - Date Analyzed: 110702 Time Analyzed: 15:12

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
ANTIMONY	mg/kg	25	0	23.9	96	75-125
ARSENIC	mg/kg	25	0	25.2	101	75-125
BARIUM	mg/kg	200	0	209	105	75-125
BERYLLIUM	mg/kg	10	0	9.88	99	75-125
CADMIUM	mg/kg	12.5	0	12.6	101	75-125
CHROMIUM	mg/kg	50	0	50.7	101	75-125
COBALT	mg/kg	50	0	51.0	102	75-125
COPPER	mg/kg	50	0	49.7	99	75-125
LEAD	mg/kg	150	0	156	104	75-125
MOLYBDENUM	mg/kg	100	0	100	100	75-125
NICKEL	mg/kg	50	0	51.1	102	75-125
SELENIUM	mg/kg	25	0	24.6	98	75-125
SILVER	mg/kg	50	0	47.8	96	75-125
THALLIUM	mg/kg	25	0	26.3	105	75-125
VANADIUM	mg/kg	100	0	101	101	75-125
ZINC	mg/kg	25	0	25.2	101	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	25	23.9	96	0	20	75-125
ARSENIC	mg/kg	25	25.1	100	1	20	75-125
BARIUM	mg/kg	200	213	107	2	20	75-125
BERYLLIUM	mg/kg	10	10.1	101	2	20	75-125
CADMIUM	mg/kg	12.5	12.9	103	2	20	75-125
CHROMIUM	mg/kg	50	51.9	104	3	20	75-125
COBALT	mg/kg	50	52.2	104	2	20	75-125
COPPER	mg/kg	50	51.0	102	3	20	75-125
LEAD	mg/kg	150	159	106	2	20	75-125
MOLYBDENUM	mg/kg	100	102	102	2	20	75-125
NICKEL	mg/kg	50	52.2	104	2	20	75-125
SELENIUM	mg/kg	25	24.8	99	1	20	75-125
SILVER	mg/kg	50	49.0	98	2	20	75-125
THALLIUM	mg/kg	25	26.3	105	0	20	75-125

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25899
Project ID: SWMU 24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2274M
LCS Filename: - Date Analyzed: 110702 Time Analyzed: 15:08
LCSD Filename: - Date Analyzed: 110702 Time Analyzed: 15:12

Continued

Batch No.: 02M2274M Method: 6010B Page: 2

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD REC
VANADIUM	mg/kg	100	103	103	2	20 75-125
ZINC	mg/kg	25	25.8	103	2	20 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/06/2002
Project ID:	SWMU24	Service ID:	26034	Collected by:	Nick Weinberger
		Lab Sample ID:	02-6034-1	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-080	Sample Matrix	Soil	Moisture %:	
Sample Type:	Field Sample	Leach Method:	ICLP		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ICLP LEAD	7439-92-1	µg/L	10	134		P		02M2313M	11/13/02	11/13/02	2	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No.	1990 023D	Collection Date:	11/06/2002
Project ID:	SWMU24	Service ID:	26034	Collected by:	Nick Weinberger
		Lab Sample ID:	02-6034-2	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-082	Sample Matrix	Soil	Moisture %:	
Sample Type:	Field Sample	Leach Method:	TCLP		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ICLP LEAD	7439-92-1	µg/L	10	264		P		02M2313M	11/13/02	11/13/02	2	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

079007

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/13/2002
 Project ID: SWMU24 Service ID: 26034 Collected by:
 Lab Sample ID: 02M2313-MB-01 Received Date: 11/13/2002
 Sample ID: 02M2313-MB-01 Sample Matrix: Water Moisture %: -
 Sample Type: Method Blank Leach Method: TCLP

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
TCLP LEAD	7439-92-1	µg/L	5	< 5	U	P		02M2313M	11/13/02	11/13/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

073005

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp.
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990.023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5899
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994

SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead

SDG NUMBER: 02-5899 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-067	02-5899-1	Soil	X
0023-SWMU24-068	02-5899-2	Soil	X
0023-SWMU24-069	02-5899-3	Soil	X
0023-SWMU24-070	02-5899-4	Soil	X
0023-SWMU24-071	02-5899-5	Soil	X
0023-SWMU24-072	02-5899-6	Soil	X
0023-SWMU24-073	02-5899-7	Soil	X
0023-SWMU24-074	02-5899-8	Soil	X
0023-SWMU24-075	02-5899-9	Soil	X
0023-SWMU24-076	02-5899-10	Soil	X
0023-SWMU24-077	02-5899-11	Soil	X
0023-SWMU24-078	02-5899-12	Soil	X
0023-SWMU24-079	02-5899-13	Soil	X
0023-SWMU24-080	02-5899-14	Soil	X
0023-SWMU24-081	02-5899-15	Soil	X
0023-SWMU24-082	02-5899-16	Soil	X
0023-SWMU24-067MD	02-5899-1MD	Soil	X
0023-SWMU24-067MS	02-5899-1MS	Soil	X
0023-SWMU24-067MSD	02-5899-1MSD	Soil	X

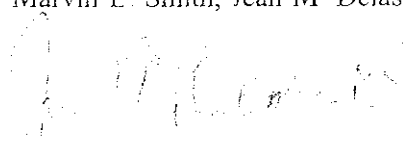
- Note 1: Samples 0023-SWMU24-076 and 0023-SWMU24-077 were field duplicates
Note 2: Sample 0023-SWMU24-077 was validated at Level IV All other samples were validated at Level III
Note 3: Samples 0023-SWMU24-080, 0023-SWMU24-081 and 0023-SWMU24-082 were analyzed for 16 other analytes besides lead The data were validated for lead only per instructions from Foster Wheeler Environmental

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:



Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UJ - The compound analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5899 Lead

SAMPLES: 0023-SWMU24-067, 0023-SWMU24-068, 0023-SWMU24-069, 0023-SWMU24-070,
0023-SWMU24-071, 0023-SWMU24-072, 0023-SWMU24-073, 0023-SWMU24-074,
0023-SWMU24-075, 0023-SWMU24-076, 0023-SWMU24-077, 0023-SWMU24-078,
0023-SWMU24-079, 0023-SWMU24-080, 0023-SWMU24-081, 0023-SWMU24-082

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and ICP Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recovery (%R) of lead was 124% for the CRI standard analyzed on 11/8/02, which exceeded the 80-120% QC limits Data qualifications based on CRDL criteria was not required No action was taken

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) in the continuing calibration blanks (CCBs) Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met. No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met. No action was required.

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met. No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met. No action was required

IX) Field Duplicates:

One set of field duplicate samples (0023-SWMU24-076 , 0023-SWMU24-077) was analyzed in this SDG. The Relative Percent Difference (RPD) was:

<u>Analyte</u>	<u>0023-SWMU24-076</u>	<u>0023-SWMU24-077</u>	<u>RPD</u>
lead	312 mg/kg	215 mg/kg	37%

The RPD for lead was within the 60% QC limit for soil samples. No action was necessary

X) Sample Result Calculation/Transcription Verification:

All criteria were met. No action was taken

XI) System Performance:

All System Performance criteria were met. No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met. No action was taken

NUMBER

04082

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWAN UZU		PURCHASE ORDER NO. 020721 Task 18		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory					
PROJECT LOCATION NAWAPA Soil Beach, CA		PROJECT NO. 1990.0230												LABORATORY ID (FOR LABORATORY)		LOCATION		DEPTH		QC	
SAMPLER NAME Nick Weinberg		SAMPLER SIGNATURE <i>[Signature]</i>												COMMENTS		Area A-132		-		Reg	
PROJECT CONTACT Lisa Brackowski		AIRBILL NUMBER Complet														Area A-133		-		Reg	
SAMPLE ID		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		TYP		TAT				Area A-134		-		Reg	
								3 4		S		S				Area A-135		-		Reg	
0023-SWANU-102	11/7/02	1307	1	X		S											Area A-136	-		Reg	
0023-SWANU-103	11/7/02	1308	1	X		S											Area A-137	-		Reg	
0023-SWANU-104	11/7/02	1310	1	X		S											Area A-138	-		Reg	
0023-SWANU-105	11/7/02	1311	1	X		S											Area A-139	-		Reg	
0023-SWANU-106	11/7/02	1313	1	X		S											Area A-140	-		Reg	
0023-SWANU-107	11/7/02	1315	1	X		S											Area A-141	-		Reg	
0023-SWANU-108	11/7/02	1316	1	X		S											Area A-142	-		Reg	
0023-SWANU-109	11/7/02	1318	1	X		S											Area A-143	-		Reg	
0023-SWANU-110	11/7/02	1321	1	X		S											Area A-144	-		Reg	
0023-SWANU-111	11/7/02	1324	1	X		S											Area A-145	-		Reg	
0023-SWANU-112	11/7/02	1325	1	X		S											Area A-146	-		Reg	
RELINQUISHED BY (Signature) <i>[Signature]</i>		DATE 11/7/02		TIME 1730		NO. OF CONTAINER		LEVEL		TYP		TAT				Area A-147		-		Reg	
COMPANY FW ENV		RECEIVED BY (Signature) <i>[Signature]</i>		DATE 11/7/02		TIME 1730		NO. OF CONTAINER		LEVEL		TYP		TAT		Area A-148		-		Reg	
RELINQUISHED BY (Signature)		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		TAT				Area A-149		-		Reg	
COMPANY		RECEIVED BY (Signature)		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		TAT		Area A-150		-		Reg	
RELINQUISHED BY (Signature)		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		TAT				Area A-151		-		Reg	
COMPANY		RECEIVED BY (Signature)		DATE		TIME		NO. OF CONTAINER		LEVEL		TYP		TAT		Area A-152		-		Reg	

LABORATORY INSTRUCTIONS/COMMENTS

MS/MSD

SAMPLING COMMENT:
Confirmation
Soil Samples

NUMBER 04080

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWANA 24		PURCHASE ORDER NO. 020721 Test 18		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION NAWNA Soil Bank CA		PROJECT NO. 1990-0230												LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
SAMPLER NAME Nick Woodhouse		SAMPLER SIGNATURE <i>Nick Woodhouse</i>												LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
PROJECT CONTACT Lisa Foster		AIRBILL NUMBER C00111												LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO OF CONTAINER	LEVEL	T	T	A	T	T	A	T	T	A	T	LOCATION	DEPTH	QC
				3	4	S	P	E	S	P	E	S	P	E		START	END
0023-SWANA 24-011	11/7/02	1236	1	X		S									Area A-A1	2'	- Reg
0023-SWANA 24-012	11/7/02	1240	1	X		S									Area A-A2	2'	- Reg
0023-SWANA 24-013	11/7/02	1247	1	V		S									Area A-A3	2'	- Reg
0023-SWANA 24-014	11/7/02	1253	1	X		S									Area A-A4	2'	- Reg
0023-SWANA 24-015	11/7/02	1258	1	X		S									Area A-A5	2'	- Reg
0023-SWANA 24-016	11/7/02	1300	1	X		S									Area A-A6	2'	- Reg
0023-SWANA 24-017	11/7/02	1301	1	X		S									Area A-A7	2'	- Reg
0023-SWANA 24-018	11/7/02	1302	1	X		S									Area A-A8	2'	- Reg
0023-SWANA 24-019	11/7/02	1304	1	X		S									Area A-A9	2'	- Reg
0023-SWANA 24-100	11/7/02	1305	1	X		S									Area A-B1	2'	- Reg
0023-SWANA 24-101	11/7/02	1306	1	X		S									Area A-B1	2'	- FD
LABORATORY INSTRUCTIONS/COMMENTS																	
COMPOSITE DESCRIPTION																	
SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)																	
TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
SAMPLING COMMENT: Confirmation Soil samples																	

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-1 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-091 Sample Matrix: Soil Moisture %: 15.3
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	6.4		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Sample ID: 0023-SWMU24-092 Lab Sample ID: 02-5936-2 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 21.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.38	13.5		P		02M12286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-3 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-093 Sample Matrix: Soil Moisture %: 15.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	9.6		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Sample ID: 0023-SWMU24-094 Lab Sample ID: 02-5936-4 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 17.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	11.2		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25936	Collected by:	
		Lab Sample ID:	02-5936-5	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-095	Sample Matrix	Soil	Moisture %:	16.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	10.0		P		02M2286L	11/08/02	11/09/02	1	6010B

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-6 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-096 Sample Matrix: Soil Moisture %: 11.4
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	7.1		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Lab Sample ID: 02-5936-7 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-097 Sample Matrix: Soil Moisture %: 9.0
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	5.2		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Sample ID: 0023-SWMU24-098 Lab Sample ID: 02-5936-8 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 14.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	12.0		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA I - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25936	Collected by:	
		Lab Sample ID:	02-5936-9	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-099	Sample Matrix	Soil	Moisture %:	19.5
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	4.9		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-10 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-100 Sample Matrix: Soil Moisture %: 15.0
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	5.3		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-11 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-101 Sample Matrix: Soil Moisture %: 13.7
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	5.0		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-12 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-102 Sample Matrix: Soil Moisture %: 8.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	3.8		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25936	Collected by:	
		Lab Sample ID:	02-5936-13	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-103	Sample Matrix	Soil	Moisture %:	16.5
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	5.8		P		02M2286L	11/08/02	11/09/02	1	6010B

[illegible]

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25936	Collected by:	
		Lab Sample ID:	02-5936-14	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-104	Sample Matrix	Soil	Moisture %:	10.3
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	3.5		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL- PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25936	Collected by:	
		Lab Sample ID:	02-5936-15	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-105	Sample Matrix	Soil	Moisture %:	14.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	6.1		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02-5936-16 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-106 Sample Matrix: Soil Moisture %: 18.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	4.3		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Sample ID: 0023-SWMU24-107 Lab Sample ID: 02-5936-17 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 6.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	16.4		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Sample ID: 0023-SWMU24-108 Lab Sample ID: 02-5936-18 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 15.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	4.1		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Sample ID: 0023-SWMU24-109 Lab Sample ID: 02-5936-19 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 18.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	3.9		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Lab Sample ID: 02-5936-20 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-110 Sample Matrix: Soil Moisture %: 6.5
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.9		P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Sample ID: 0023-SWMU24-111 Lab Sample ID: 02-5936-21 Received Date: 11/01/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.9		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Sample ID: 0023-SWMU24-112 Lab Sample ID: 02-5936-22 Received Date: 11/01/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 10

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	17.3		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25936 Collected by:
Lab Sample ID: 02M2286-MB-01 Received Date: 11/08/2002
Sample ID: 02M2286-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	0.088	B	P		02M2286L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/09/2002
 Project ID: Naval Weapon Station Service ID: 25936 Collected by:
 Lab Sample ID: 02M2293-MB-01 Received Date: 11/09/2002
 Sample ID: 02M2293-MB-01 Sample Matrix Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2293L	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25936
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2286L
MS Filename: - Date Analyzed: 110902 Time Analyzed: 10:13
MSD Filename: - Date Analyzed: 110902 Time Analyzed: 10:16
MS Sample No: 0023-SWMU24-110 Sample Lab ID: 02-5936-20 Moisture, % 6.5

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	160	4.9	158	96	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	160	159	96	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

APPROVED

[NOV 14 2007]

76958

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25936
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2293L
MS Filename: - Date Analyzed: 110902 Time Analyzed: 14:23
MSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:25
MS Sample No: 0023-SWMU24-111 Sample Lab ID: 02-5936-21 Moisture, % 3.9

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	156	4.9	160	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	156	162	101	2	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

APCL
[NOV 14 2002]

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25936
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2293L
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 14:10
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:12

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	157	105	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	157	105	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

ALTERED

NOV 14 2002

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25936
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2286L
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 09:57
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 09:59

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	152	101	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	150	100	1	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

AMENDED

NOV. 14 2002

76945

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp.
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5936
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-5936 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-091	02-5936-1	Soil	X
0023-SWMU24-092	02-5936-2	Soil	X
0023-SWMU24-093	02-5936-3	Soil	X
0023-SWMU24-094	02-5936-4	Soil	X
0023-SWMU24-095	02-5936-5	Soil	X
0023-SWMU24-096	02-5936-6	Soil	X
0023-SWMU24-097	02-5936-7	Soil	X
0023-SWMU24-098	02-5936-8	Soil	X
0023-SWMU24-099	02-5936-9	Soil	X
0023-SWMU24-100	02-5936-10	Soil	X
0023-SWMU24-101	02-5936-11	Soil	X
0023-SWMU24-102	02-5936-12	Soil	X
0023-SWMU24-103	02-5936-13	Soil	X
0023-SWMU24-104	02-5936-14	Soil	X
0023-SWMU24-105	02-5936-15	Soil	X
0023-SWMU24-106	02-5936-16	Soil	X
0023-SWMU24-107	02-5936-17	Soil	X
0023-SWMU24-108	02-5936-18	Soil	X
0023-SWMU24-109	02-5936-19	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-110	02-5936-20	Soil	X
0023-SWMU24-111	02-5936-21	Soil	X
0023-SWMU24-112	02-5936-22	Soil	X
0023-SWMU24-110MD	02-5936-20MD	Soil	X
0023-SWMU24-110MS	02-5936-20MS	Soil	X
0023-SWMU24-110MSD	02-5936-20MSD	Soil	X
0023-SWMU24-111MD	02-5936-21MD	Soil	X
0023-SWMU24-111MS	02-5936-21MS	Soil	X
0023-SWMU24-111MSD	02-5936-21MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-100 / 0023-SWMU24-101 and 0023-SWMU24-111 / 0023-SWMU24-112 were field duplicates

Note 2: Samples 0023-SWMU24-101 and 0023-SWMU24-112 were validated at Level IV. All other samples were validated at Level III.

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity.

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits.

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory.

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5936 Lead

SAMPLES: 0023-SWMU24-091, 0023-SWMU24-092, 0023-SWMU24-093, 0023-SWMU24-094, 0023-SWMU24-095, 0023-SWMU24-096, 0023-SWMU24-097, 0023-SWMU24-098, 0023-SWMU24-099, 0023-SWMU24-100, 0023-SWMU24-101, 0023-SWMU24-102, 0023-SWMU24-103, 0023-SWMU24-104, 0023-SWMU24-105, 0023-SWMU24-106, 0023-SWMU24-107, 0023-SWMU24-108, 0023-SWMU24-109, 0023-SWMU24-110, 0023-SWMU24-111, 0023-SWMU24-112

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable with qualifications. All applied data qualifiers were based on guideline protocol unless otherwise noted.

MAJOR ISSUES

No major problems were observed in this SDG.

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken.

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary.

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recoveries (%R's) of lead were 187% and 161% for two CRI standards analyzed on 11/9/02, which exceeded the 80-120% QC limits. Data qualifications based on CRDL criteria was not required. No action was taken.

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken.

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met. No action was necessary.

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met. No action was required.

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met. No action was taken.

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met. No action was required.

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-100 / 0023-SWMU24-101 and 0023-SWMU24-111 / 0023-SWMU24-112) were analyzed in this SDG. The Relative Percent Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-100</u>	<u>0023-SWMU24-101</u>	<u>RPD</u>
lead	5.3 mg/kg	5.0 mg/kg	5.8%
<u>Analyte</u>	<u>0023-SWMU24-111</u>	<u>0023-SWMU24-112</u>	<u>RPD</u>
lead	4.9 mg/kg	17.3 mg/kg	123%

The RPD for lead in the second set of field duplicate exceeded the 60% QC limit for soil samples. The results for lead in the two samples were qualified as estimated (I).

X) Sample Result, Calculation Transcription Verification:

All criteria were met. No action was taken.

XI) System Performance:

All System Performance criteria were met. No action was taken.

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met. No action was taken.

CHAIN-OF-CUSTODY RECORD

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED		LABORATORY NAME		Project Information Section	
PROJECT LOCATION		PROJECT NO.		PROJECT NO.		LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
SAMPLER NAME		SAMPLER SIGNATURE		SAMPLER SIGNATURE		LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
PROJECT CONTACT		AIRBILL NUMBER		AIRBILL NUMBER		LABORATORY ID (FOR LABORATORY)		Do not submit to Laboratory	
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL	T	A	T	LOCATION	DEPTH
0022-SUMMIT-124	11/7/02	1350	1	1	S	4	4	Area A-D4	2' - Reg
0023-SUMMIT-125	11/7/02	1351	1	1	S	4	4	Area A-D5	2' - Reg
0023-SUMMIT-126	11/7/02	1400	1	1	S	4	4	Area A-D6	2' - Reg
0023-SUMMIT-127	11/7/02	1401	1	1	S	4	4	Area A-D7	2' - Reg
0023-SUMMIT-128	11/7/02	1403	1	1	S	4	4	Area A-D8	2' - Reg
0023-SUMMIT-129	11/7/02	1408	1	1	S	4	4	Area A-D9	2' - Reg
0023-SUMMIT-130	11/7/02	1411	1	1	S	4	4	Area A-E1	2' - Reg
0023-SUMMIT-131	11/7/02	1414	1	1	S	4	4	Area A-E2	2' - Reg
0023-SUMMIT-132	11/7/02	1416	1	1	S	4	4	Area A-E3	2' - Reg
0023-SUMMIT-133	11/7/02	1420	1	1	S	4	4	Area A-E4	2' - Reg
0023-SUMMIT-134	11/7/02	1421	1	1	S	4	4	Area A-E5	2' - Reg
RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)		SAMPLING COMMENT:	
DATE		DATE		DATE		DATE		Confirmation	
TIME		TIME		TIME		TIME		Soil	
COMPANY		COMPANY		COMPANY		COMPANY		Samples	
RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)			
DATE		DATE		DATE		DATE			
TIME		TIME		TIME		TIME			
COMPANY		COMPANY		COMPANY		COMPANY			
RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)		RECEIVED BY (Signature)			
DATE		DATE		DATE		DATE			
TIME		TIME		TIME		TIME			
COMPANY		COMPANY		COMPANY		COMPANY			

White - Laboratory: Pink - Laboratory: Canary - Project Five: Vanilla - Data Management

NUMBER

U4081

CHAIN-OF-CUSTODY RECORD

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED										LABORATORY NAME		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION		PROJECT NO.												APCL			
SAMPLER NAME		SAMPLER SIGNATURE												LABORATORY ID (FOR LABORATORY)			
PROJECT CONTACT		AIRBILL NUMBER												02-5937			
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL				TYP		TAT		COMMENTS		LOCATION	DEPTH	QC	
				1	2	3	4	E	P	A	T				START	END	
0023-SW00020-113	11/7/02	1327	1	X				S						Area A-C3	2'	-	Reg
0023-SW00020-114	11/7/02	1330	1	X				S						Area A-C4	2'	-	Reg
0023-SW00020-115	11/7/02	1332	1	X				S						Area A-C5	2'	-	Reg
0023-SW00020-116	11/7/02	1334	1	X				S						Area A-C6	2'	-	Reg
0023-SW00020-117	11/7/02	1338	1	X				S						Area A-C7	2'	-	Reg
0023-SW00020-118	11/7/02	1340	1	X				S						Area A-C8	2'	-	Reg
0023-SW00020-119	11/7/02	1343	1	X				S						Area A-C9	2'	-	Reg
0023-SW00020-120	11/7/02	1346	1	X				S						Area A-D1	2'	-	Reg
0023-SW00020-121	11/7/02	1349	1	X				S						Area A-D2	2'	-	Reg
0023-SW00020-122	11/7/02	1351	1	X				S						Area A-D3	2'	-	Reg
0023-SW00020-123	11/7/02	1352	1	X				S						Area A-D3	2'	-	Reg
LABORATORY INSTRUCTIONS/COMMENTS																	
COMPOSITE DESCRIPTION																	
SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)																	
TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
SAMPLING COMMENT:																	
Confirmation																	
Soil																	
Samples																	

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Sample ID: 0023-SWMU24-113 Lab Sample ID: 02-5937-1 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.8		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Sample ID: 0023-SWMU24-114 Lab Sample ID: 02-5937-2 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.2		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-3	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-115	Sample Matrix	Soil	Moisture %:	4 2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	3.9		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Sample ID: 0023-SWMU24-116 Lab Sample ID: 02-5937-4 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 18.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	8.5		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Sample ID: 0023-SWMU24-117 Lab Sample ID: 02-5937-5 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 11.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	531		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Sample ID: 0023-SWMU24-118 Lab Sample ID: 02-5937-6 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	6.0		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Lab Sample ID: 02-5937-7 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-119 Sample Matrix: Soil Moisture %: 6.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.7		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Sample ID: 0023-SWMU24-120 Lab Sample ID: 02-5937-8 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 6.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	7.4		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-9	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-121	Sample Matrix	Soil	Moisture %:	5.4
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	5.3		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Sample ID: 0023-SWMU24-122 Lab Sample ID: 02-5937-10 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 44

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	3.3		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Sample ID: 0023-SWMU24-123 Lab Sample ID: 02-5937-11 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.5		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Sample ID: 0023-SWMU24-124 Lab Sample ID: 02-5937-12 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	64.9		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-13	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-125	Sample Matrix	Soil	Moisture %:	11.0
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	4.5		P		02M2287L	11/08/02	11/08/02	1	6010B

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Sample ID: 0023-SWMU24-126 Lab Sample ID: 02-5937-14 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 18.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	31.3		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Lab Sample ID: 02-5937-15 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-127 Sample Matrix: Soil Moisture %: 10.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	17.8		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-16	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-128	Sample Matrix	Soil	Moisture %:	11.0
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	9.7		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-17	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-129	Sample Matrix	Soil	Moisture %:	12.7
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	20.8		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Lab Sample ID: 02-5937-18 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-130 Sample Matrix: Soil Moisture %: 8.3
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	6.1		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02M2288-MB-01 Received Date: 11/08/2002
Sample ID: 02M2288-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2288L	11/08/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-2 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-198 Sample Matrix: Soil Moisture %: 10.0
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	24.0		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Lab Sample ID: 02-5937-19 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-131 Sample Matrix: Soil Moisture %: 8.4
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	13.7		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-20	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-132	Sample Matrix	Soil	Moisture %:	78
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	7.3		P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02-5937-21	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-133	Sample Matrix	Soil	Moisture %:	6.8
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.7		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25937 Collected by:
Lab Sample ID: 02-5937-22 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-134 Sample Matrix: Soil Moisture %: 6.3
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.3		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990.023	Collection Date:	11/08/2002
Project ID:	Naval Weapon Station	Service ID:	25937	Collected by:	
		Lab Sample ID:	02M2287-MB-01	Received Date:	11/08/2002
Sample ID:	02M2287-MB-01	Sample Matrix	Soil	Moisture %:	
Sample Type:	Method Blank				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	0.11	B	P		02M2287L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023 Collection Date: 11/09/2002
 Project ID: Naval Weapon Station Service ID: 25937 Collected by:
 Lab Sample ID: 02M2293-MB-01 Received Date: 11/09/2002
 Sample ID: 02M2293-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2293L	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
 Case No: SAS No: Service ID: 25937
 Project ID: Naval Weapon Station Project No: 1990 023 Sample Matrix: Soil
 Batch No: 02M2287L
 MS Filename: - Date Analyzed: 110802 Time Analyzed: 15:32
 MSD Filename: - Date Analyzed: 110802 Time Analyzed: 15:34
 MS Sample No: 0023-SWMU24-130 Sample Lab ID: 02-5937-18 Moisture, % 8.3

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	164	61	169	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	164	171	101	2	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

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FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25937
Project ID: Naval Weapon Station Project No: 1990 023 Sample Matrix: Soil
Batch No: 02M2293L
MS Filename: - Date Analyzed: 110902 Time Analyzed: 14:23
MSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:25
MS Sample No: 0023-SWMU24-111 Sample Lab ID: 02-5936-21 Moisture, % 3.9

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	156	4.9	160	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	156	162	101	2	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

APPLIED

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FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
 Case No: SAS No: Service ID: 25937
 Project ID: Naval Weapon Station Project No: 1990 023 Sample Matrix: Soil
 Batch No: 02M2287L
 LCS Filename: - Date Analyzed: 110802 Time Analyzed: 15:17
 LCSD Filename: - Date Analyzed: 110802 Time Analyzed: 15:20

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	152	101	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, % RPD REC
LEAD	mg/kg	150	152	101	0	30 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

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FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25937
Project ID: Naval Weapon Station Project No: 1990 023 Sample Matrix: Soil
Batch No: 02M2293L
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 14:10
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:12

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	157	105	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit %	
						RPD	REC
LEAD	mg/kg	150	157	105	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments

NOV 14 2002

75055

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5937
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-5937 (Level III - IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-113	02-5937-1	Soil	X
0023-SWMU24-114	02-5937-2	Soil	X
0023-SWMU24-115	02-5937-3	Soil	X
0023-SWMU24-116	02-5937-4	Soil	X
0023-SWMU24-117	02-5937-5	Soil	X
0023-SWMU24-118	02-5937-6	Soil	X
0023-SWMU24-119	02-5937-7	Soil	X
0023-SWMU24-120	02-5937-8	Soil	X
0023-SWMU24-121	02-5937-9	Soil	X
0023-SWMU24-122	02-5937-10	Soil	X
0023-SWMU24-123	02-5937-11	Soil	X
0023-SWMU24-124	02-5937-12	Soil	X
0023-SWMU24-125	02-5937-13	Soil	X
0023-SWMU24-126	02-5937-14	Soil	X
0023-SWMU24-126	02-5937-15	Soil	X
0023-SWMU24-127	02-5937-16	Soil	X
0023-SWMU24-128	02-5937-17	Soil	X
0023-SWMU24-129	02-5937-18	Soil	X
0023-SWMU24-130	02-5937-19	Soil	X
0023-SWMU24-132	02-5937-20	Soil	X
0023-SWMU24-133	02-5937-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-134	02-5937-22	Soil	X
0023-SWMU24-130MD	02-5937-18MD	Soil	X
0023-SWMU24-130MS	02-5937-18MS	Soil	X
0023-SWMU24-130MSD	02-5937-18MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-122 / 0023-SWMU24-123 and 0023-SWMU24-133 / 0023-SWMU24-134 were field duplicates

Note 2: Samples 0023-SWMU24-123 and 0023-SWMU24-134 were validated at Level IV All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- J - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UU - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity.

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory.

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5937 Lead

SAMPLES: 0023-SWMU24-113, 0023-SWMU24-114, 0023-SWMU24-115, 0023-SWMU24-116, 0023-SWMU24-117, 0023-SWMU24-118, 0023-SWMU24-119, 0023-SWMU24-120, 0023-SWMU24-121, 0023-SWMU24-122, 0023-SWMU24-123, 0023-SWMU24-124, 0023-SWMU24-125, 0023-SWMU24-126, 0023-SWMU24-127, 0023-SWMU24-128, 0023-SWMU24-129, 0023-SWMU24-130, 0023-SWMU24-131, 0023-SWMU24-132, 0023-SWMU24-133, 0023-SWMU24-134

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable with qualifications. All applied data qualifiers were based on guideline protocol unless otherwise noted.

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken.

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary.

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recovery (%R) of lead was 187% for the CRI standard analyzed on 11/8/02, which exceeded the 80-120% QC limits. Data qualifications based on CRDL criteria was not required. No action was taken.

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken.

V) ICP Serial Dilution Analysis:

The Serial Dilution Percent Difference (%D) was 12.3% for lead in dilution sample 0023-SWMU24-130L, which exceeded the 10% QC limit. All results for lead in the SDG samples, which consisted entirely of positive results, were qualified as estimated (I).

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met. No action was required.

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met. No action was taken.

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met. No action was required.

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-122 / 0023-SWMU24-123 and 0023-SWMU24-133 / 0023-SWMU24-134) were analyzed in this SDG. The Relative Percent Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-122</u>	<u>0023-SWMU24-123</u>	<u>RPD</u>
lead	33 mg/kg	35 mg/kg	5.4%

<u>Analyte</u>	<u>0023-SWMU24-133</u>	<u>0023-SWMU24-134</u>	<u>RPD</u>
lead	4.7 mg/kg	4.3 mg/kg	8.9%

Both RPDs for lead were within the 60% QC limit for soil samples. No action was necessary.

X) Sample Result Calculation Transcription Verification:

All criteria were met. No action was taken.

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

NUMBER **04085**

CHAIN-OF-CUSTODY RECORD

PROJECT NAME <i>SWANU20</i>		PURCHASE ORDER NO. <i>2072 Task 18</i>		ANALYSES REQUIRED				LABORATORY NAME <i>APCL</i>		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION <i>NAVWPA San Diego, CA</i>		PROJECT NO. <i>1490-1235</i>						LABORATORY ID (FOR LABORATORY) <i>02-5938</i>			
SAMPLER NAME <i>Nick Wierzbowski</i>		SAMPLER SIGNATURE <i>[Signature]</i>									
PROJECT CONTACT <i>130 P. Wierzbowski</i>		AIRBILL NUMBER <i>00000</i>									
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL	T	A	T	COMMENTS	LOCATION	DEPTH	QC
				1 4	1	2	3			START	END
002-1490-146	11/7/02	1507	1	X					Area A-F6	2'	Reg
002-1490-147	11/7/02	1501	1	X					Area A-F7	2'	Reg
002-1490-148	11/7/02	1503	1	X					Area A-F8	2'	Reg
002-1490-149	11/7/02	1505	1	X					Area A-F9	2'	Reg
002-1490-150	11/7/02	1507	1	X				<i>MS/MSD</i>	Area A-G1	2'	Reg
002-1490-151	11/7/02	1508	1	X					Area A-G2	2'	Reg
002-1490-152	11/7/02	1511	1	X					Area A-G3	2'	Reg
002-1490-153	11/7/02	1514	1	X					Area A-G4	2'	Reg
002-1490-154	11/7/02	1515	1	X					Area A-G5	2'	Reg
002-1490-155	11/7/02	1517	1	X					Area A-G6	2'	Reg
002-1490-156	11/7/02	1518	1	X					Area A-G6	2'	Reg
LABORATORY INSTRUCTIONS/COMMENTS											
RECEIVED BY (Signature) <i>[Signature]</i>											
DATE <i>11/7/02</i>											
TIME <i>1730</i>											
COMPANY <i>FLW ENV</i>											
RECEIVED BY (Signature)											
DATE											
TIME											
COMPANY											
RECEIVED BY (Signature)											
DATE											
TIME											
COMPANY											
COMPOSITE DESCRIPTION											
SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)											
TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
SAMPLING COMMENT: <i>confirmation</i> <i>5017</i> <i>samples</i>											

NUMBER 04084

CHAIN-OF-CUSTODY RECORD

PROJECT NAME		PURCHASE ORDER NO.		ANALYSES REQUIRED										LABORATORY NAME		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION		PROJECT NO.												APCL			
SAMPLER NAME		SAMPLER SIGNATURE												LABORATORY ID (FOR LABORATORY)			
PROJECT CONTACT		AIRBILL NUMBER												02-5938			
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL	T Y P E	T A T					COMMENTS				LOCATION	DEPTH START END	OC
0012-500000-135	11/7/02	1421	1	Y	S	4	X								Area A-E5	2'	Reg
0012-500000-136	11/7/02	1426	1	Y	S	4	X								Area A-E6	2'	Reg
0012-500000-137	11/7/02	1430	1	Y	S	4	X								Area A-E7	2'	Reg
0012-500000-138	11/7/02	1435	1	Y	S	4	X								Area A-E8	2'	Reg
0012-500000-139	11/7/02	1439	1	Y	S	4	X								Area A-E9	2'	Reg
0012-500000-140	11/7/02	1442	1	Y	S	4	X								Area A-F1	2'	Reg
0012-500000-141	11/7/02	1446	1	Y	S	4	X								Area A-F2	2'	Reg
0012-500000-142	11/7/02	1449	1	Y	S	4	X								Area A-F3	2'	Reg
0012-500000-143	11/7/02	1449	1	Y	S	4	X								Area A-F4	2'	Reg
0012-500000-144	11/7/02	1454	1	Y	S	4	X								Area A-F5	2'	Reg
0012-500000-145	11/7/02	1455	1	Y	S	4	X								Area A-F5	2'	FD
LABORATORY INSTRUCTIONS/COMMENTS																	
COMPOSITE DESCRIPTION																	
SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)																	
TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN																	
SAMPLING COMMENT: Confirmation Soil Samples																	

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp.	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25938	Collected by:	
		Lab Sample ID:	02-5938-1	Received Date:	11/08/2002
Sample ID:	0023-SWMU24-135	Sample Matrix	Soil	Moisture %:	11.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	1439-92-1	mg/kg	0.34	8.8		P		02M2288L	11/08/02	11/09/02	1	6010B

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-136 Lab Sample ID: 02-5938-2 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	7.3		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25938 Collected by:
 Sample ID: 0023-SWMU24-137 Lab Sample ID: 02-5938-3 Received Date: 11/08/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 14.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	9.8		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25938 Collected by:
 Lab Sample ID: 02-5938-4 Received Date: 11/08/2002
 Sample ID: 0023-SWMU24-138 Sample Matrix: Soil Moisture %: 13.9
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	17.9		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25938	Collected by:	
		Lab Sample ID:	02-5938-5	Received Date:	11/08/2002
Sample ID:	0023-SWMU24-139	Sample Matrix	Soil	Moisture %:	14.3
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	8.7		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-140 Lab Sample ID: 02-5938-6 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	8.2		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-7 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-141 Sample Matrix: Soil Moisture %: 17.7
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	7.5		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-8 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-142 Sample Matrix: Soil Moisture %: 17.9
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	86.5		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25938 Collected by:
 Lab Sample ID: 02-5938-9 Received Date: 11/08/2002
 Sample ID: 0023-SWMU24-143 Sample Matrix: Soil Moisture %: 20.3
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.38	16.2		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-144 Lab Sample ID: 02-5938-10 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 16.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	10.8		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-11 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-145 Sample Matrix: Soil Moisture %: 15.2
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	10.1		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-146 Lab Sample ID: 02-5938-12 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	11.2		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P. & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-13 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-147 Sample Matrix: Soil Moisture %: 9.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	20.1		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-148 Lab Sample ID: 02-5938-14 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 6.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	5.1		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-149 Lab Sample ID: 02-5938-15 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	17.9		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-16 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-150 Sample Matrix: Soil Moisture %: 14.0
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	8.0		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25938	Collected by:	
		Lab Sample ID:	02-5938-17	Received Date:	11/08/2002
Sample ID:	0023-SWMU24-151	Sample Matrix	Soil	Moisture %:	17.2
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	10.0		P		02M12288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-152 Lab Sample ID: 02-5938-18 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	13.5		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-19 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-153 Sample Matrix: Soil Moisture %: 14.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	19.7		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-20 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-154 Sample Matrix: Soil Moisture %: 14.9
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	16.2		P		02M2288L	11/08/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02-5938-21 Received Date: 11/08/2002
Sample ID: 0023-SWMU24-155 Sample Matrix: Soil Moisture %: 5.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.8		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Sample ID: 0023-SWMU24-156 Lab Sample ID: 02-5938-22 Received Date: 11/08/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	4.7		P		02M2293L	11/09/02	11/09/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25938 Collected by:
Lab Sample ID: 02M2288-MB-01 Received Date: 11/08/2002
Sample ID: 02M2288-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	<0.3	U	P		02M2288L	11/08/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/09/2002
 Project ID: Naval Weapon Station Service ID: 25938 Collected by:
 Lab Sample ID: 02M2293-MB-01 Received Date: 11/09/2002
 Sample ID: 02M2293-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2293L	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
 Case No: SAS No: Service ID: 25938
 Project ID: Naval Weapon Station Project No: 1990.023D Sample Matrix: Soil
 Batch No: 02M2288L
 MS Filename: - Date Analyzed: 110902 Time Analyzed: 12:01
 MSD Filename: - Date Analyzed: 110902 Time Analyzed: 12:06
 MS Sample No: 0023-SWMU24-150 Sample Lab ID: 02-5938-16 Moisture, % 14.0

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
LEAD	mg/kg	174	Unspiked	MS	98	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
LEAD	mg/kg	174	178	98	0	30 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments

AMENDED

NOV 14 2002

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25938
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2293L
MS Filename: - Date Analyzed: 110902 Time Analyzed: 14:23
MSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:25
MS Sample No: 0023-SWMU24-111 Sample Lab ID: 02-5936-21 Moisture, % 3.9

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	156	4.9	160	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	156	162	101	2	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

APCL
NOV 14 2002

76439

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No. SAS No: Service ID: 25938
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2293L
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 14:10
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:12

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	157	105	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	157	105	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

APCL
NOV 14 2002

76444

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25938
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2288L
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 11:52
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 11:54

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	159	106	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	159	106	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

NOV 14 2002

76445

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CIO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5938
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review, 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead

SDG NUMBER: 02-5938 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-135	02-5938-1	Soil	X
0023-SWMU24-136	02-5938-2	Soil	X
0023-SWMU24-137	02-5938-3	Soil	X
0023-SWMU24-138	02-5938-4	Soil	X
0023-SWMU24-139	02-5938-5	Soil	X
0023-SWMU24-140	02-5938-6	Soil	X
0023-SWMU24-141	02-5938-7	Soil	X
0023-SWMU24-142	02-5938-8	Soil	X
0023-SWMU24-143	02-5938-9	Soil	X
0023-SWMU24-144	02-5938-10	Soil	X
0023-SWMU24-145	02-5938-11	Soil	X
0023-SWMU24-146	02-5938-12	Soil	X
0023-SWMU24-147	02-5938-13	Soil	X
0023-SWMU24-148	02-5938-14	Soil	X
0023-SWMU24-149	02-5938-15	Soil	X
0023-SWMU24-150	02-5938-16	Soil	X
0023-SWMU24-151	02-5938-17	Soil	X
0023-SWMU24-152	02-5938-18	Soil	X
0023-SWMU24-153	02-5938-19	Soil	X
0023-SWMU24-154	02-5938-20	Soil	X
0023-SWMU24-155	02-5938-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-156	02-5938-22	Soil	X
0023-SWMU24-150MD	02-5938-16MD	Soil	X
0023-SWMU24-150MS	02-5938-16MS	Soil	X
0023-SWMU24-150MSD	02-5938-16MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-144 / 0023-SWMU24-145 and 0023-SWMU24-155 / 0023-SWMU24-156 were field duplicates

Note 2: Samples 0023-SWMU24-145 and 0023-SWMU24-156 were validated at Level IV. All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L Smith, Jean M Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- J - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UJ - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator.

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5938 Lead

SAMPLES: 0023-SWMU24-135, 0023-SWMU24-136, 0023-SWMU24-137, 0023-SWMU24-138, 0023-SWMU24-139, 0023-SWMU24-140, 0023-SWMU24-141, 0023-SWMU24-142, 0023-SWMU24-143, 0023-SWMU24-144, 0023-SWMU24-145, 0023-SWMU24-146, 0023-SWMU24-147, 0023-SWMU24-148, 0023-SWMU24-149, 0023-SWMU24-150, 0023-SWMU24-151, 0023-SWMU24-152, 0023-SWMU24-153, 0023-SWMU24-154, 0023-SWMU24-155, 0023-SWMU24-156

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

The Percent Recovery (%R) of lead was 187% for the CRI standard analyzed on 11/9/02 which exceeded the 80-120% QC limits Data qualifications based on CRDL criteria was not required No action was taken

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) 0.002 mg/L in the continuing calibration blanks (CCBs) Since all detections of lead in the SDG samples exceeded 5X the blank amounts no

action was required

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met
No action was required

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met No action was required

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-144 / 0023-SWMU24-145 and
0023-SWMU24-155 / 0023-SWMU24-156) were analyzed in this SDG The Relative Percent
Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-144</u>	<u>0023-SWMU24-145</u>	<u>RPD</u>
lead	10.8 mg/kg	10.1 mg/kg	1.7%
<u>Analyte</u>	<u>0023-SWMU24-155</u>	<u>0023-SWMU24-156</u>	<u>RPD</u>
lead	4.8 mg/kg	4.7 mg/kg	2.1%

Both RPDs for lead were within the 60% QC limit for soil samples. No action was necessary

X) Sample Result, Calculation/Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

CHAIN-OF-CUSTODY RECORD

PROJECT NAME <i>SWAN 20</i>		PURCHASE ORDER NO. <i>020771 Task 18</i>		ANALYSES REQUIRED										LABORATORY NAME <i>APCL</i>		Project Information Section Do not submit to Laboratory			
PROJECT LOCATION <i>APV WPA 54, Port Ch</i>		PROJECT NO. <i>1490.02.241</i>												LABORATORY ID (FOR LABORATORY) <i>02-8939</i>					
SAMPLER NAME <i>Nick W. Brown</i>		SAMPLER SIGNATURE <i>[Signature]</i>		AIRBILL NUMBER <i>888888</i>		NO. OF CONTAINER		LEVEL		T		COMMENTS		LOCATION		DEPTH		QC	
PROJECT CONTACT <i>2.50 Probed</i>		DATE COLLECTED		TIME COLLECTED		1		3 4		T A						START		END	
0023-SWAN 20-157		11/7/02		1519		1		Y		S		X				Area A-67		2' - Reg	
0023-SWAN 20-158		11/7/02		1520		1		X		S		X				Area A-68		2' - Reg	
0023-SWAN 20-159		11/7/02		1522		1		X		S		X				Area A-69		2' - Reg	
0023-SWAN 20-160		11/7/02		1523		1		X		S		X				Area A-A1N Side wall		- Reg	
0023-SWAN 20-161		11/7/02		1524		1		Y		S		X				Area A-A2N Side wall		- Reg	
0023-SWAN 20-162		11/7/02		1526		1		X		S		X				Area A-A3N Side wall		- Reg	
0023-SWAN 20-163		11/7/02		1527		1		Y		S		X				Area A-A4N Side wall		- Reg	
0023-SWAN 20-164		11/7/02		1528		1		Y		S		X				Area A-A5N Side wall		- Reg	
0023-SWAN 20-165		11/7/02		1529		1		Y		S		X				Area A-A6N Side wall		- Reg	
0023-SWAN 20-166		11/7/02		1530		1		Y		S		X				Area A-A7N Side wall		- Reg	
0023-SWAN 20-167		11/7/02		1531		1		X		S		X				Area A-A8N Side wall		- FD	
RELINQUISHED BY (Signature) <i>[Signature]</i>		DATE <i>11/7/02</i>		RECEIVED BY (Signature) <i>[Signature]</i>		DATE <i>11/7/02</i>		LABORATORY INSTRUCTIONS/COMMENTS										SAMPLING COMMENT: <i>Confirmation Soil Samples</i>	
COMPANY <i>FWEN C</i>		TIME <i>1730</i>		COMPANY		COMPOSITE DESCRIPTION													
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)											
COMPANY		TIME		COMPANY		COMPANY		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		DATE		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN											
COMPANY		TIME		COMPANY		COMPANY													

NUMBER

04081

CHAIN-OF-CUSTODY RECORD

PROJECT NAME <i>SWANUZU</i>		PURCHASE ORDER NO. <i>020721 Test 15</i>		ANALYSES REQUIRED										LABORATORY NAME <i>APCL</i>		Project Information Section Do not submit to Laboratory					
PROJECT LOCATION <i>NADUPN Sec 1 Block CA</i>		PROJECT NO. <i>1760 02 38</i>		NO. OF CONTAINER		LEVEL		T Y P E		T A T		COMMENTS		LOCATION		DEPTH START END		QC			
SAMPLER NAME <i>Arch Weyner</i>		SAMPLER SIGNATURE <i>[Signature]</i>		TIME COLLECTED		J 4		S S		S S											
PROJECT CONTACT <i>L. So [Signature]</i>		AIRBILL NUMBER <i>600000</i>		DATE COLLECTED																	
SAMPLE ID		DATE COLLECTED		TIME COLLECTED		NO. OF CONTAINER		LEVEL		T Y P E		T A T		COMMENTS		LOCATION		DEPTH START END		QC	
<i>0023-SWANUZU-1603</i>	<i>11/7/02</i>	<i>1533</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-169</i>	<i>11/7/02</i>	<i>1535</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-170</i>	<i>11/7/02</i>	<i>1536</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-171</i>	<i>11/7/02</i>	<i>1539</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-172</i>	<i>11/7/02</i>	<i>1542</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-173</i>	<i>11/7/02</i>	<i>1543</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-174</i>	<i>11/7/02</i>	<i>1546</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-175</i>	<i>11/7/02</i>	<i>1547</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-176</i>	<i>11/7/02</i>	<i>1550</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-177</i>	<i>11/7/02</i>	<i>1551</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
<i>0023-SWANUZU-178</i>	<i>11/7/02</i>	<i>1552</i>	<i>1</i>	<i>Y</i>	<i>48</i>	<i>NO</i>	<i>X</i>								<i>Area A-8N</i>	<i>Side wall</i>	<i>—</i>	<i>—</i>	<i>Reg</i>		
RELINQUISHED BY (Signature) <i>[Signature]</i>														LABORATORY INSTRUCTIONS/COMMENTS						SAMPLING COMMENT: <i>Confirmation</i>	
DATE <i>11/7/02</i>																					
TIME <i>1:30</i>																					
COMPANY <i>FW</i>																					
RECEIVED BY (Signature) <i>[Signature]</i>														COMPOSITE DESCRIPTION							
DATE																					
TIME																					
COMPANY																					
RECEIVED BY (Signature)														SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)							
DATE														TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN							
TIME														COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN							
COMPANY																					

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Sample ID: 0023-SWMU24-157 Lab Sample ID: 02-5939-1 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 43

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.8		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Lab Sample ID: 02-5939-2 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-158 Sample Matrix: Soil Moisture %: 33
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	7.3		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Sample ID: 0023-SWMU24-159 Lab Sample ID: 02-5939-3 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 71

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	5.6		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp	Project No: 1990 023D	Collection Date: 11/07/2002
Project ID: Naval Weapon Station	Service ID: 25939	Collected by:
	Lab Sample ID: 02-5939-4	Received Date: 11/07/2002
Sample ID: 0023-SWMU24-160	Sample Matrix: Soil	Moisture %: 8.5
Sample Type: Field Sample		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	24.7		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Sample ID: 0023-SWMU24-161 Lab Sample ID: 02-5939-5 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	6.2		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Lab Sample ID: 02-5939-6 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-162 Sample Matrix: Soil Moisture %: 6.1
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	42.6		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Lab Sample ID: 02-5939-1 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-163 Sample Matrix: Soil Moisture %: 20.2
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.38	11.8		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25939	Collected by:	
		Lab Sample ID:	02-5939-8	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-164	Sample Matrix	Soil	Moisture %:	3.6
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	14.8		P		02M2289M	11/08/02	11/08/02	1	6010B

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Sample ID: 0023-SWMU24-165 Lab Sample ID: 02-5939-9 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 77

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	13.0		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25939	Collected by:	
		Lab Sample ID:	02-5939-10	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-166	Sample Matrix	Soil	Moisture %:	2 5
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	203		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Sample ID: 0023-SWMU24-167 Lab Sample ID: 02-5939-11 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	1930		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp	Project No: 1990 023D	Collection Date: 11/07/2002
Project ID: Naval Weapon Station	Service ID: 25939	Collected by:
Sample ID: 0023-SWMU24-168	Lab Sample ID: 02-5939-12	Received Date: 11/07/2002
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 14.9

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	6.6		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02-5939-13 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-169 Sample Matrix: Soil Moisture %: 4.7
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.7		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02-5939-14 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-170 Sample Matrix: Soil Moisture %: 9.4
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	25.0		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Sample ID: 0023-SWMU24-171 Lab Sample ID: 02-5939-15 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	22.9		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25939	Collected by:	
		Lab Sample ID:	02-5939-16	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-172	Sample Matrix	Soil	Moisture %:	4 0
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	16.4		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25939 Collected by:
 Lab Sample ID: 02-5939-17 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-173 Sample Matrix: Soil Moisture %: 2.7
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	22.2		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Sample ID: 0023-SWMU24-174 Lab Sample ID: 02-5939-18 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	13.4		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Sample ID: 0023-SWMU24-175 Lab Sample ID: 02-5939-19 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	9.1		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02-5939-20 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-176 Sample Matrix: Soil Moisture %: 11.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	12.4		P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02-5939-21 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-177 Sample Matrix: Soil Moisture %: 2.3
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.4		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02-5939-22 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-178 Sample Matrix: Soil Moisture %: 2.4
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	4.3		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02M2289-MB-01 Received Date: 11/08/2002
Sample ID: 02M2289-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	0.13	B	P		02M2289M	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25939 Collected by:
Lab Sample ID: 02M2290-MB-01 Received Date: 11/08/2002
Sample ID: 02M2290-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2290L	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25939
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2290L
MS Filename: - Date Analyzed: 110802 Time Analyzed: 13:35
MSD Filename: - Date Analyzed: 110802 Time Analyzed: 13:37
MS Sample No: 0023-SWMU24-190 Sample Lab ID: 02-5940-12 Moisture: % 8.5

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	164	54	172	102	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	164	175	103	1	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

AMENDED

NOV 15 2002

74348

Applied P & Ch Laboratory

Client Name	Foster Wheeler Environmental Corp	Contract No:	Lab Code:	APCL	
Case No:		SAS No:	Service ID:	25939	
Project ID:	Naval Weapon Station	Project No:	1990 023D	Sample Matrix:	Soil
		Batch No:	02M2289M		
MS Filename:	-	Date Analyzed:	110802	Time Analyzed:	18:06
MSD Filename:	-	Date Analyzed:	110802	Time Analyzed:	18:08
MS Sample No:	0023-SWMU24-170	Sample Lab ID:	02-5939-14	Moisture, %	9.4

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
LEAD	mg/kg	166	25	189	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
LEAD	mg/kg	166	199	105	6	30 75-125
# of Out-of-control				0	0	

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

100-443887-100

NOV 15 2002

74340

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25939
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2290L
LCS Filename: - Date Analyzed: 110802 Time Analyzed: 13:23
LCSD Filename: - Date Analyzed: 110802 Time Analyzed: 13:25

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	148	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	149	99	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

APPLIED

NOV 15 2002

74354

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25939
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2289M
LCS Filename: - Date Analyzed: 110802 Time Analyzed: 11:54
LCSD Filename: - Date Analyzed: 110802 Time Analyzed: 17:56

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	155	103	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	154	103	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

APPLIED

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5939
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-5939 (Level III, IV)

OVERVIEW

SAMPLES

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-157	02-5939-1	Soil	X
0023-SWMU24-158	02-5939-2	Soil	X
0023-SWMU24-159	02-5939-3	Soil	X
0023-SWMU24-160	02-5939-4	Soil	X
0023-SWMU24-161	02-5939-5	Soil	X
0023-SWMU24-162	02-5939-6	Soil	X
0023-SWMU24-163	02-5939-7	Soil	X
0023-SWMU24-164	02-5939-8	Soil	X
0023-SWMU24-165	02-5939-9	Soil	X
0023-SWMU24-166	02-5939-10	Soil	X
0023-SWMU24-167	02-5939-11	Soil	X
0023-SWMU24-168	02-5939-12	Soil	X
0023-SWMU24-169	02-5939-13	Soil	X
0023-SWMU24-170	02-5939-14	Soil	X
0023-SWMU24-171	02-5939-15	Soil	X
0023-SWMU24-172	02-5939-16	Soil	X
0023-SWMU24-173	02-5939-17	Soil	X
0023-SWMU24-174	02-5939-18	Soil	X
0023-SWMU24-175	02-5939-19	Soil	X
0023-SWMU24-176	02-5939-20	Soil	X
0023-SWMU24-177	02-5939-21	Soil	X

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-178	02-5939-22	Soil	X
0023-SWMU24-170MD	02-5939-14MD	Soil	X
0023-SWMU24-170MS	02-5939-14MS	Soil	X
0023-SWMU24-170MSD	02-5939-14MSD	Soil	X

Note 1: Sample sets 0023-SWMU24-166 / 0023-SWMU24-167 and 0023-SWMU24-177 / 0023-SWMU24-178 were field duplicates

Note 2: Samples 0023-SWMU24-167 and 0023-SWMU24-178 were validated at Level IV All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5939 Lead

SAMPLES: 0023-SWMU24-157, 0023-SWMU24-158, 0023-SWMU24-159, 0023-SWMU24-160, 0023-SWMU24-161, 0023-SWMU24-162, 0023-SWMU24-163, 0023-SWMU24-164, 0023-SWMU24-165, 0023-SWMU24-166, 0023-SWMU24-167, 0023-SWMU24-168, 0023-SWMU24-169, 0023-SWMU24-170, 0023-SWMU24-171, 0023-SWMU24-172, 0023-SWMU24-173, 0023-SWMU24-174, 0023-SWMU24-175, 0023-SWMU24-176, 0023-SWMU24-177, 0023-SWMU24-178

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable with qualifications. All applied data qualifiers were based on guideline protocol unless otherwise noted.

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken.

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary.

III) Contract Required Detection Limits Standard (CRDL):

All CRDL criteria were met. No action was required.

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) 0.002 mg/L in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG All LCS Recovery criteria were met
No action was required

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS MSD criteria were met No action was required

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-166 / 0023-SWMU24-167 and
0023-SWMU24-177 / 0023-SWMU24-178) were analyzed in this SDG The Relative Percent
Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-166</u>	<u>0023-SWMU24-167</u>	<u>RPD</u>
lead	203 mg/kg	1930 mg/kg	162%
<u>Analyte</u>	<u>0023-SWMU24-177</u>	<u>0023-SWMU24-178</u>	<u>RPD</u>
lead	4 4 mg/kg	4 3 mg/kg	2 3%

The RPD for lead in the first set of field duplicates exceeded the 60% QC limit for soil samples
The two samples were qualified as estimated (J)

X) Sample Result, Calculation/Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

CHAIN-OF-CUSTODY RECORD

NUMBER 04088

PROJECT NAME SWAMP24	PURCHASE ORDER NO. 20721 TAD12	ANALYSES REQUIRED				LABORATORY NAME APCL	Project Information Section Do not submit to Laboratory		
PROJECT LOCATION NAVWPL San Branch, CA	PROJECT NO. 1990.0221					LABORATORY ID (FOR LABORATORY) 02-5940			
SAMPLER NAME Nick Weinberger	SAMPLER SIGNATURE <i>Nick Weinberger</i>					COMMENTS			
PROJECT CONTACT Lisa Pucakowski	AIRBILL NUMBER 61111								
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL 3 4	T T A T		LOCATION	DEPTH START END	QC
0022-SWAMP24-179	11/7/02	1553	1	X	48 hr	X	Area-625 sidewall	-	Reg
0023-SWAMP24-180	11/7/02	1554	1	X	48 hr	X	Area-635 sidewall	-	Reg
0023-SWAMP24-181	11/7/02	1556	1	X	48 hr	X	Area-645 sidewall	/	Reg
0023-SWAMP24-182	11/7/02	1557	1	X	48 hr	X	Area-655 sidewall	/	Reg
0023-SWAMP24-183	11/7/02	1558	1	X	48 hr	X	Area-665 sidewall	/	Reg
0023-SWAMP24-184	11/7/02	1600	1	X	48 hr	X	Area-675 sidewall	/	Reg
0023-SWAMP24-185	11/7/02	1602	1	X	48 hr	X	Area-685 sidewall	/	Reg
0023-SWAMP24-186	11/7/02	1604	1	X	48 hr	X	Area-695 sidewall	/	Reg
0024-SWAMP24-187	11/7/02	1609	1	X	48 hr	X	Area-69W sidewall	/	Reg
0024-SWAMP24-188	11/7/02	1611	1	X	48 hr	X	Area-69W sidewall	/	Reg
0024-SWAMP24-189	11/7/02	1613	1	X	48 hr	X	Area-69W sidewall	/	Reg
RELINQUISHED BY (Signature) <i>Nick Weinberger</i>	DATE 11/7/02	RECEIVED BY (Signature) <i>Kon Olympe</i>	LABORATORY INSTRUCTIONS/COMMENTS				SAMPLING COMMENT: Confirmation Soil Samples		
COMPANY FWL	TIME 1730	COMPANY FWL	COMPOSITE DESCRIPTION						
RELINQUISHED BY (Signature)	DATE	RECEIVED BY (Signature)							
COMPANY	TIME	COMPANY							
RELINQUISHED BY (Signature)	DATE	RECEIVED BY (Signature)							
COMPANY	TIME	COMPANY							
			SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)						
			TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN						
			COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN						

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SWAN 24		PURCHASE ORDER NO. 020721 Task 18		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory				
PROJECT LOCATION Kilowick Seal Beach CA		PROJECT NO. 1990-023D												LABORATORY ID (FOR LABORATORY) 02-S94d						
SAMPLER NAME Nick Weinberg		SAMPLER SIGNATURE <i>Nick Weinberg</i>		AIRBILL NUMBER 020721		DATE COLLECTED 11/7/02		TIME COLLECTED 1614	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS MS/MSD		LOCATION Area A - E9W sidewalk		DEPTH START END		QC	
PROJECT CONTACT Lisa Thompson		DATE COLLECTED 11/7/02		TIME COLLECTED 1615	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - D9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-190		DATE COLLECTED 11/7/02		TIME COLLECTED 1617	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - C9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-191		DATE COLLECTED 11/7/02		TIME COLLECTED 1619	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - B9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-192		DATE COLLECTED 11/7/02		TIME COLLECTED 1620	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - A9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-193		DATE COLLECTED 11/7/02		TIME COLLECTED 1621	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - A9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-194		DATE COLLECTED 11/7/02		TIME COLLECTED 1621	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - A9W sidewalk		DEPTH START END		QC					
SAMPLE ID 0023-SWAN24-195		DATE COLLECTED 11/7/02		TIME COLLECTED 1621	NO OF CONTAINER 1	LEVEL 3 4	T T P E	A A T	COMMENTS		LOCATION Area A - A9W sidewalk		DEPTH START END		QC					
RELINQUISHED BY (Signature) <i>Nick Weinberg</i>		DATE 11/7/02		RECEIVED BY (Signature) <i>Karl B. [Signature]</i>		LABORATORY INSTRUCTIONS/COMMENTS										SAMPLING COMMENT: Confirmation				
COMPANY Foster Wheeler		TIME 1736		COMPANY APCL												Soil				
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		COMPOSITE DESCRIPTION										Samples				
COMPANY		TIME		COMPANY																
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY)														
COMPANY		TIME		COMPANY		TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN														
RELINQUISHED BY (Signature)		DATE		RECEIVED BY (Signature)		COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN														
COMPANY		TIME		COMPANY																

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25940 Collected by:
 Sample ID: 0023-SWMU24-179 Lab Sample ID: 02-5940-1 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 12.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	35.1		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Sample ID: 0023-SWMU24-180 Lab Sample ID: 02-5940-2 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 3.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	9.0		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-3 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-181 Sample Matrix: Soil Moisture %: 3.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	5.9		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-4 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-182 Sample Matrix Soil Moisture %: 2.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	15.6		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25940	Collected by:	
		Lab Sample ID:	02-5940-5	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-183	Sample Matrix	Soil	Moisture %:	6 7
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	13.8		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25940	Collected by:	
		Lab Sample ID:	02-5940-6	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-184	Sample Matrix	Soil	Moisture %:	71
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	12.6		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-7 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-185 Sample Matrix: Soil Moisture %: 3.1
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	12.7		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-8 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-186 Sample Matrix: Soil Moisture %: 0.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	2.9		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-9 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-187 Sample Matrix: Soil Moisture %: 13
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.30	2.4		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25940 Collected by:
 Lab Sample ID: 02-5940-10 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-188 Sample Matrix: Soil Moisture %: 4.5
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	3.6		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-11 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-189 Sample Matrix: Soil Moisture %: 5.9
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	3.2		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-12 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-190 Sample Matrix: Soil Moisture %: 8.5
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	5.4		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp	Project No: 1990 023D	Collection Date: 11/07/2002
Project ID: Naval Weapon Station	Service ID: 25940	Collected by:
Sample ID: 0023-SWMU24-191	Lab Sample ID: 02-5940-13	Received Date: 11/07/2002
Sample Type: Field Sample	Sample Matrix: Soil	Moisture %: 2.5

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	14.1		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/01/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-14 Received Date: 11/01/2002
Sample ID: 0023-SWMU24-192 Sample Matrix: Soil Moisture %: 5.6
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	903		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02-5940-15 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-193 Sample Matrix: Soil Moisture %: 15.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	7.4		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Sample ID: 0023-SWMU24-194 Lab Sample ID: 02-5940-16 Received Date: 11/07/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 16.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	19.9		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25940 Collected by:
 Lab Sample ID: 02-5940-17 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-195 Sample Matrix: Soil Moisture %: 17.0
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	14.4		P		02M2290L	11/08/02	11/08/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/08/2002
Project ID: Naval Weapon Station Service ID: 25940 Collected by:
Lab Sample ID: 02M2290-MB-01 Received Date: 11/08/2002
Sample ID: 02M2290-MB-01 Sample Matrix Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2290L	11/08/02	11/08/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name	Foster Wheeler Environmental Corp	Contract No:	Lab Code	APCL
Case No		SAS No:	Service ID:	25940
Project ID:	Naval Weapon Station	Project No:	Sample Matrix:	Soil
		Batch No:		
MS Filename	-	Date Analyzed:	Time Analyzed:	13:35
MSD Filename:	-	Date Analyzed:	Time Analyzed:	13:37
MS Sample No	0023-SWMU24-190	Sample Lab ID:	Moisture, %	8.5

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	164	5.4	172	102	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	164	175	103	1	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments

AMENDED

NOV 15 2002

74734

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No. SAS No: Service ID: 25940
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2290L
LCS Filename - Date Analyzed: 110802 Time Analyzed: 13 23
LCSD Filename - Date Analyzed: 110802 Time Analyzed: 13 25

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	148	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	149	99	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

AMENDED

NOV 15 2002

76727

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp.
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-5940
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review, 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-5940 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-179	02-5939-1	Soil	X
0023-SWMU24-180	02-5939-2	Soil	X
0023-SWMU24-181	02-5939-3	Soil	X
0023-SWMU24-182	02-5939-4	Soil	X
0023-SWMU24-183	02-5939-5	Soil	X
0023-SWMU24-184	02-5939-6	Soil	X
0023-SWMU24-185	02-5939-7	Soil	X
0023-SWMU24-186	02-5939-8	Soil	X
0023-SWMU24-187	02-5939-9	Soil	X
0023-SWMU24-188	02-5939-10	Soil	X
0023-SWMU24-189	02-5939-11	Soil	X
0023-SWMU24-190	02-5939-12	Soil	X
0023-SWMU24-191	02-5939-13	Soil	X
0023-SWMU24-192	02-5939-14	Soil	X
0023-SWMU24-193	02-5939-15	Soil	X
0023-SWMU24-194	02-5939-16	Soil	X
0023-SWMU24-195	02-5939-17	Soil	X
0023-SWMU24-190MD	02-5939-12MD	Soil	X
0023-SWMU24-190MS	02-5939-12MS	Soil	X
0023-SWMU24-190MSD	02-5939-12MSD	Soil	X

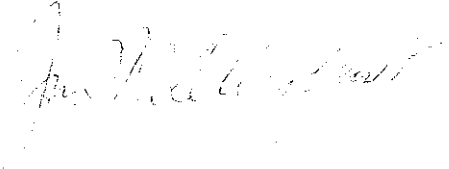
Note 1: Sample sets 0023-SWMU24-188 / 0023-SWMU24-189 and 0023-SWMU24-194 / 0023-SWMU24-195 were field duplicates.
Note 2: Samples 0023-SWMU24-189 and 0023-SWMU24-195 were validated at Level IV. All other samples were validated at Level III

Sample ID

Suffix Codes: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE DUPLICATE

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

A handwritten signature in dark ink, appearing to read "Marvin L. Smith", is written over the "RELEASE SIGNATURE:" label.

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-5940 Lead

SAMPLES: 0023-SWMU24-179, 0023-SWMU24-180, 0023-SWMU24-181, 0023-SWMU24-182, 0023-SWMU24-183, 0023-SWMU24-184, 0023-SWMU24-185, 0023-SWMU24-186, 0023-SWMU24-187, 0023-SWMU24-188, 0023-SWMU24-189, 0023-SWMU24-190, 0023-SWMU24-191, 0023-SWMU24-192, 0023-SWMU24-193, 0023-SWMU24-194, 0023-SWMU24-195

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

All CRDL criteria were met No action was required

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) 0.002 mg/L in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG All LCS Recovery criteria were met
No action was required

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS / MSD criteria were met No action was required

IX) Field Duplicates:

Two sets of field duplicate samples (0023-SWMU24-188 - 0023-SWMU24-189 and
0023-SWMU24-194 - 0023-SWMU24-195) were analyzed in this SDG The Relative Percent
Differences (RPDs) were:

<u>Analyte</u>	<u>0023-SWMU24-188</u>	<u>0023-SWMU24-189</u>	<u>RPD</u>
lead	3.6 mg/kg	3.2 mg/kg	13%
<u>Analyte</u>	<u>0023-SWMU24-194</u>	<u>0023-SWMU24-195</u>	<u>RPD</u>
lead	19.9 mg/kg	14.4 mg/kg	34%

Both RPDs for lead were within the 60% QC limit for soil samples No action was necessary

X) Sample Result Calculation Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken.

NUMBER

CHAIN-OF-CUSTODY RECORD

PROJECT NAME SUNAM 2		PURCHASE ORDER NO. 020721 Task 1		ANALYSES REQUIRED				LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory	
PROJECT LOCATION NAWANA 9-16-00-01		PROJECT NO. 020721-0231						LABORATORY ID (FOR LABORATORY) 02-5941 (02-6067-5941)			
SAMPLER NAME Black Weiborn		SAMPLER SIGNATURE [Signature]									
PROJECT CONTACT Lisa Burbank		AIRBILL NUMBER 0000000000									
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL 3 4	T T A T	T T A T	COMMENTS				
0023-000000-0182	11/7/02	0830	5	X	S	S	SREPB 11/2/02 TEP PB				
0023-000000-0184	11/7/02	0905	5	X	S	S					
0023-000000-0185	11/7/02	0930	5	X	S	S					
0023-000000-0186	11/7/02	0945	5	X	S	S					
0023-000000-0187	11/7/02	1015	5	X	S	S					
0023-000000-0188	11/7/02	1035	5	X	S	S					
0023-000000-0189	11/7/02	1105	5	X	S	S					
0023-000000-0190	11/7/02	1130	5	X	S	S					
0023-000000-0191	11/7/02	1635	5	X	S	S					
RELINQUISHED BY (Signature) [Signature]		DATE 11/7/02	RECEIVED BY (Signature) [Signature]	LABORATORY INSTRUCTIONS/COMMENTS Compos. 11/7/02 analysis							
COMPANY NAME Foster Wheeler		TIME 1730	COMPOSITE DESCRIPTION APCL	COMPOSITE DESCRIPTION							
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)								
COMPANY		TIME	COMPANY								
RELINQUISHED BY (Signature)		DATE	RECEIVED BY (Signature)								
COMPANY		TIME	COMPANY								
				SAMPLE CONDITION UPON RECEIPT (FOR LABORATORY) TEMPERATURE: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN COOLER SEAL: <input type="checkbox"/> INTACT <input type="checkbox"/> BROKEN							
SAMPLING COMMENT: Stack pile 21 & 22 Characterization Samples											

02-05941

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Sample ID: 0023-SWMU24-083 Lab Sample ID: 02-5941-1 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.3	< 5.3	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.32	3.3		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	55.5		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.21	0.082	J	P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.53	13.4		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.53	6.5		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.53	12.6		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7139-92-1	mg/kg	0.32	17.1		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.21	0.074	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.32	9.4		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.53	1.5		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7140-22-4	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.53	26.8		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.53	46.4		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Lab Sample ID: 02-5941-2 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-084 Sample Matrix: Soil Moisture %: 6.8
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.4	< 5.4	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.32	3.1		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	72.1		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.21	0.18	J	P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.54	15.7		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.54	7.7		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.54	15.4		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.32	22.4		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.21	0.12	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.32	10.5		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.54	1.6		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.54	< 0.54	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.54	< 0.54	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.54	32.6		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.54	55.9		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Sample ID: 0023-SWMU24-085 Lab Sample ID: 02-5941-3 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.3	< 5.3	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.32	4.2		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	68.0		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.21	0.086	J	P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.53	15.5		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.53	7.8		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.53	14.2		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.32	18.0		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.21	0.071	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.32	11.1		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.53	1.3		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.53	31.9		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.53	54.0		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Sample ID: 0023-SWMU24-086 Lab Sample ID: 02-5941-4 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 9.1

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.5	< 5.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.33	3.1		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	85.5		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	0.18	J	P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.55	17.8		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.55	9.0		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.55	17.8		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.33	18.0		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.089	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.33	12.7		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.55	1.2		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.55	< 0.55	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.55	< 0.55	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.55	34.7		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.55	63.5		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Sample ID: 0023-SWMU24-087 Lab Sample ID: 02-5941-5 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.3

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.3	< 5.3	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.32	3.1		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	63.9		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.21	0.47		P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.53	14.6		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.53	7.1		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.53	15.3		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.32	118		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.21	0.12	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.21	< 0.21	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.32	10		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.53	1.3		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.53	< 0.53	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.53	29.1		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.53	52.3		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Sample ID: 0023-SWMU24-088 Lab Sample ID: 02-5941-6 Received Date: 11/07/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 24.0

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	6.6	< 6.6	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.39	4.2		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.3	77.4		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.26	< 0.26	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.26	1.9		P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.66	15.5		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.66	7.1		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.66	24.0		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.39	70.3		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.26	0.10	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.26	< 0.26	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.39	10.5		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.66	1.4		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.66	< 0.66	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.66	< 0.66	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.66	30.4		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.66	62.5		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	25941	Collected by:	
		Lab Sample ID:	02-5941-7	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-089	Sample Matrix	Soil	Moisture %:	7.3
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.4	<5.4	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.32	3.0		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	81.3		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	<0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	0.39		P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.54	16.0		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.54	1.9		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.54	23.6		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.32	325		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.071	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	<0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.32	11.2		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.54	1.2		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.54	<0.54	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.54	<0.54	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.54	33.6		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.54	65.7		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990.023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Lab Sample ID: 02-5941-8 Received Date: 11/07/2002
 Sample ID: 0023-SWMU24-090 Sample Matrix: Soil Moisture %: 8.9
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.5	< 5.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.33	3.9		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	67.1		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	0.29		P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.55	14.5		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.55	7.2		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.55	16.6		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.33	43.7		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.085	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.33	10.4		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.55	1.3		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.55	< 0.55	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.55	< 0.55	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.55	30.0		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.55	58.0		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Lab Sample ID: 02-5941-9 Received Date: 11/01/2002
 Sample ID: 0023-SWMU24-196 Sample Matrix: Soil Moisture %: 10.0
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.6	< 5.6	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.33	3.3		P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.1	86.4		P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.22	0.23		P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.56	18.2		P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.56	9.7		P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.56	18.8		P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.33	17.9		P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.22	0.069	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.22	< 0.22	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.33	13.4		P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.56	2.2		P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.56	< 0.56	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.56	< 0.56	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.56	38.5		P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.56	12.6		P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/09/2002
 Project ID: Naval Weapon Station Service ID: 25941 Collected by:
 Lab Sample ID: 02M2292-MB-01 Received Date: 11/09/2002
 Sample ID: 02M2292-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5	< 5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.3	< 0.3	U	P		02M2292M	11/09/02	11/09/02	1	6010B
BARIUM	7440-39-3	mg/kg	1	< 1	U	P		02M2292M	11/09/02	11/09/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.2	< 0.2	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.2	< 0.2	U	P		02M2292M	11/09/02	11/09/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
COBALT	7440-48-4	mg/kg	0.5	0.020	J	P		02M2292M	11/09/02	11/09/02	1	6010B
COPPER	7440-50-8	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
LEAD	7439-92-1	mg/kg	0.3	0.065	J	P		02M2292M	11/09/02	11/09/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.2	0.0049	J	CV		02M2301H	11/11/02	11/11/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.2	< 0.2	U	P		02M2292M	11/09/02	11/09/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.3	0.074	J	P		02M2292M	11/09/02	11/09/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
SILVER	7440-22-4	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.5	< 0.5	U	P		02M2292M	11/09/02	11/09/02	1	6010B
ZINC	7440-66-6	mg/kg	0.5	0.063	J	P		02M2292M	11/09/02	11/09/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL) but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25941
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2301H
MS Filename: - Date Analyzed: 111102 Time Analyzed: 11:23
MSD Filename: - Date Analyzed: 111102 Time Analyzed: 14:25
MS Sample No: SW4-8 Sample Lab ID: 02-5900-10 Moisture, %

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
MERCURY	mg/kg	0.833	0.084	0.817	98	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
MERCURY	mg/kg	0.833	0.766	92	6	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

AMENDED

76727

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25941
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2292M
MS Filename: - Date Analyzed: 110902 Time Analyzed: 14:23
MSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:26
MS Sample No: 0023-SWMU24-083 Sample Lab ID: 02-5941-1 Moisture, %: 5.4

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
ANTIMONY	mg/kg	1 06	0	0 829	78	75-125
ARSENIC	mg/kg	1 06	3 3	4 39	103	75-125
BARIUM	mg/kg	8 44	55 5	64 2	103	75-125
BERYLLIUM	mg/kg	0 424	0	0 345	81	75-125
CADMIUM	mg/kg	0 528	0 082	0 598	98	75-125
CHROMIUM	mg/kg	2 12	13 1	15 5	99	75-125
COBALT	mg/kg	2 12	6 5	8 62	100	75-125
COPPER	mg/kg	2 12	12 6	14 8	104	75-125
LEAD	mg/kg	6 36	17 1	23 6	102	75-125
MOLYBDENUM	mg/kg	4 24	0	4 12	97	75-125
NICKEL	mg/kg	2 12	9 4	11 5	99	75-125
SELENIUM	mg/kg	1 06	1 5	2 52	96	75-125
SILVER	mg/kg	2 12	0	2 11	100	75-125
THALLIUM	mg/kg	1 06	0	0 950	90	75-125
VANADIUM	mg/kg	4 24	26 8	30 9	99	75-125
ZINC	mg/kg	1 06	46 4	47 5	104	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	1 06	0 802	76	3	30	75-125
ARSENIC	mg/kg	1 06	4 39	103	0	30	75-125
BARIUM	mg/kg	8 44	64 3	104	1	30	75-125
BERYLLIUM	mg/kg	0 424	0 346	82	1	30	75-125
CADMIUM	mg/kg	0 528	0 599	98	0	30	75-125
CHROMIUM	mg/kg	2 12	15 5	99	0	30	75-125
COBALT	mg/kg	2 12	8 63	100	0	30	75-125
COPPER	mg/kg	2 12	14 8	104	0	30	75-125
LEAD	mg/kg	6 36	23 6	102	0	30	75-125
MOLYBDENUM	mg/kg	4 24	1 10	97	0	30	75-125
NICKEL	mg/kg	2 12	11 5	99	0	30	75-125
SELENIUM	mg/kg	1 06	2 52	96	0	30	75-125
SILVER	mg/kg	2 12	2 12	100	0	30	75-125
THALLIUM	mg/kg	1 06	0 987	93	3	30	75-125

AMENDED

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
 Case No: SAS No: Service ID: 25941
 Project ID: Naval Weapon Station Project No: 1990.023D Sample Matrix: Soil
 Batch No: 02M2292M
 MS Filename: - Date Analyzed: 110902 Time Analyzed: 14:23
 MSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:26
 MS Sample No: 0023-SWMU24-083 Sample Lab ID: 02-5941-1 Moisture, % 5.4

Continued

Batch No: 02M2292M Method 6010B Page 2

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, % RPD REC
VANADIUM	mg/kg	4.24	30.9	99	0	30 75-125
ZINC	mg/kg	1.06	47.5	104	0	30 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

76729

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 25941
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2301H
LCS Filename: - Date Analyzed: 111102 Time Analyzed: 14:13
LCSD Filename: - Date Analyzed: 111102 Time Analyzed: 14:15

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
MERCURY	mg/kg	0 833	0	0 850	102	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
MERCURY	mg/kg	0 833	0 846	102	0	30	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

76734

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25941
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2292M
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 14:07
LCSD Filename: - Date Analyzed: 110902 Time Analyzed: 14:10

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
ANTIMONY	mg/kg	1 0	0	0 885	89	75-125
ARSENIC	mg/kg	1 0	0	0 999	100	75-125
BARIUM	mg/kg	8 00	0	8 40	105	75-125
BERYLLIUM	mg/kg	0 40	0	0 391	98	75-125
CADMIUM	mg/kg	0 500	0	0 484	97	75-125
CHROMIUM	mg/kg	2 0	0	2 06	103	75-125
COBALT	mg/kg	2 0	0	2 08	104	75-125
COPPER	mg/kg	2 0	0	1 97	99	75-125
LEAD	mg/kg	6 00	0	6 29	105	75-125
MOLYBDENUM	mg/kg	4 00	0	4 10	103	75-125
NICKEL	mg/kg	2 0	0	2 07	104	75-125
SELENIUM	mg/kg	1 0	0	0 991	99	75-125
SILVER	mg/kg	2 0	0	1 96	98	75-125
THALLIUM	mg/kg	1 0	0	1 06	106	75-125
VANADIUM	mg/kg	4 00	0	4 02	101	75-125
ZINC	mg/kg	1 0	0	1 04	104	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	1 0	0 897	90	1	30	75-125
ARSENIC	mg/kg	1 0	0 998	100	0	30	75-125
BARIUM	mg/kg	8 00	8 37	105	0	30	75-125
BERYLLIUM	mg/kg	0 40	0 388	97	1	30	75-125
CADMIUM	mg/kg	0 500	0 481	96	1	30	75-125
CHROMIUM	mg/kg	2 0	2 06	103	0	30	75-125
COBALT	mg/kg	2 0	2 06	103	1	30	75-125
COPPER	mg/kg	2 0	1 97	99	0	30	75-125
LEAD	mg/kg	6 00	6 28	105	0	30	75-125
MOLYBDENUM	mg/kg	4 00	4 10	103	0	30	75-125
NICKEL	mg/kg	2 0	2 06	103	1	30	75-125
SELENIUM	mg/kg	1 0	0 996	100	1	30	75-125
SILVER	mg/kg	2 0	1 95	98	0	30	75-125
THALLIUM	mg/kg	1 0	1 06	106	0	30	75-125

76735

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 25941
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2292M
LCS Filename: - Date Analyzed: 110902 Time Analyzed: 14:07
LCS D Filename: - Date Analyzed: 110902 Time Analyzed: 14:10

Continued

Batch No.: 02M2292M Method: 6010B Page: 2

Spiked Components	Unit	Spike Added	LCS D Concentration	LCS D Rec% #	RPD% #	QC Limit, % RPD REC
VANADIUM	mg/kg	4 00	4 00	100	1	30 75-125
ZINC	mg/kg	1 0	1 03	103	1	30 75-125
# of Out-of-control				0	0	

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

RECEIVED

76736

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	26067	Collected by:	
		Lab Sample ID:	02-6067-1	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-087	Sample Matrix	Soil	Moisture %:	
Sample Type:	Field Sample	Leach Method:	ICLP		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ICLP LEAD	7439-92-1	µg/L	10	67.5		P		02M2333M	11/15/02	11/15/02	2	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

07607

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID	Naval Weapon Station	Service ID:	26067	Collected by:	
		Lab Sample ID:	02-6067-1	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-087	Sample Matrix	Soil	Moisture %:	
Sample Type:	Field Sample	Leach Method:	CIT		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
SIIC LEAD	7439-92-1	µg/L	25	3620		P		02M2345L	11/18/02	11/18/02	5	6010B

Note: RL - PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

0736 8

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 26067 Collected by:
Lab Sample ID: 02-6067-2 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-088 Sample Matrix: Soil Moisture %:
Sample Type: Field Sample Leach Method: CIT

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
SILC LEAD	7439-92-1	µg/L	25	6080		P		02M2345L	11/18/02	11/18/02	5	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

678669

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/07/2002
Project ID: Naval Weapon Station Service ID: 26067 Collected by:
Lab Sample ID: 02-6067-3 Received Date: 11/07/2002
Sample ID: 0023-SWMU24-089 Sample Matrix: Soil Moisture %:
Sample Type: Field Sample Leach Method: TCLP

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
TCLP LEAD	7439-92-1	µg/L	10	178		P		02M2333M	11/15/02	11/15/02	2	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory

Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/07/2002
Project ID:	Naval Weapon Station	Service ID:	26067	Collected by:	
		Lab Sample ID:	02-6067-3	Received Date:	11/07/2002
Sample ID:	0023-SWMU24-089	Sample Matrix:	Soil	Moisture %	
Sample Type:	Field Sample	Leach Method:	CIT		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
STLC LEAD	7439-92-1	µg/L	25	3390		P		02M2345L	11/18/02	11/18/02	5	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control

 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control

M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

078011

Applied P & Ch Laboratory

Client Name:	Foster Wheeler Environmental Corp	Project No.	1990 023D	Collection Date:	11/15/2002
Project ID:	Naval Weapon Station	Service ID:	26067	Collected by:	
		Lab Sample ID:	02M2333-MB-01	Received Date:	11/15/2002
Sample ID:	02M2333-MB-01	Sample Matrix	Water	Moisture %:	-
Sample Type:	Method Blank	Leach Method:	ICLP		

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ICLP LEAD	1439-92-1	µg/L	5	< 5	U	P		02M2333M	11/15/02	11/15/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier. P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

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Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/18/2002
Project ID: Naval Weapon Station Service ID: 26067 Collected by:
Lab Sample ID: 02M2345-MB-01 Received Date: 11/18/2002
Sample ID: 02M2345-MB-01 Sample Matrix: Water Moisture %: -
Sample Type: Method Blank Leach Method: CIT

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
STLC LEAD	7439-92-1	µg/L	5	< 5	U	P		02M2345L	11/18/02	11/18/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

CHAIN-OF-CUSTODY RECORD

NUMBER

04U92

PROJECT NAME SWANU 24		PURCHASE ORDER NO. 020721 Task 18		ANALYSES REQUIRED										LABORATORY NAME APCL		Project Information Section Do not submit to Laboratory								
PROJECT LOCATION NAUWPN Seal Beach, CA		PROJECT NO. 1990.023D												LABORATORY ID (FOR LABORATORY) 02-6068		Do not submit to Laboratory								
SAMPLER NAME Nick Weinberger		SAMPLER SIGNATURE <i>Nick Weinberger</i>																						
PROJECT CONTACT Lisa Brenkowski		AIRBILL NUMBER Courier																						
SAMPLE ID	DATE COLLECTED	TIME COLLECTED	NO. OF CONTAINER	LEVEL	T T Y P E	T A T											COMMENTS		LOCATION		DEPTH START END		QC	
0023-SWANU24-197	11/12/02	1125	1	X	S	45	X	EPA6010B (only)												Area B- Sidewall		—		Reg
0023-SWANU24-198	11/12/02	1127	1	X	S	45	X													Area B- Sidewall		—		Reg
0023-SWANU24-199	11/12/02	1129	1	X	S	45	X													Area B- Sidewall		—		Reg
0023-SWANU24-200	11/12/02	1131	1	X	S	45	X													Area B- Sidewall		—		Reg
0023-SWANU24-201	11/12/02	1215	1	X	S	45	X													Area A- Sidewall		—		Reg
0023-SWANU24-202	11/12/02	1217	1	X	S	45	X													Area A- Sidewall		—		Reg
0023-SWANU24-203	11/12/02	1219	1	X	S	45	X											MS/MSD		Area A- Sidewall		—		Reg
0023-SWANU24-204	11/12/02	1221	1	X	S	45	X													Area A- Sidewall		—		Reg
0023-SWANU24-205	11/12/02	1223	1	X	S	45	X													Area A- Sidewall		—		Reg
0023-SWANU24-206	11/12/02	1225	1	X	S	45	X													Area A- Sidewall		—		Reg
0023-SWANU24-207	11/12/02	1227	1	X	S	45	X													Area A- Sidewall		—		Reg
RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				LABORATORY INSTRUCTIONS/COMMENTS				Over excavation of floor and sidewalls				
COMPANY FMC				COMPANY FMC				COMPANY FMC				COMPANY FMC				COMPOSITE DESCRIPTION								
RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				SAMPLE CONDITION				TEMPERATURE				
COMPANY FMC				COMPANY FMC				COMPANY FMC				COMPANY FMC				COOLER SEAL				INTACT				
RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				RECEIVED BY (Signature) <i>[Signature]</i>				DATE 11/12/02				SAMPLE CONDITION				TEMPERATURE				
COMPANY FMC				COMPANY FMC				COMPANY FMC				COMPANY FMC				COOLER SEAL				INTACT				

CHAIN-OF-CUSTODY RECORD

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
 Project ID: SWMU24 Service ID: 26068 Collected by:
 Sample ID: 0023-SWMU24-197 Lab Sample ID: 02-6068-1 Received Date: 11/12/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 40

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	110		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL EQL or CRDL), but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

078807

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-2 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-198 Sample Matrix: Soil Moisture %: 10.0
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.33	24.0		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-3 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-199 Sample Matrix: Soil Moisture %: 20
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.31	8.1		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Sample ID: 0023-SWMU24-200 Lab Sample ID: 02-6068-4 Received Date: 11/12/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 5.2

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	585		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Sample ID: 0023-SWMU24-201 Lab Sample ID: 02-6068-5 Received Date: 11/12/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 77

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	49.3		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Sample ID: 0023-SWMU24-202 Lab Sample ID: 02-6068-6 Received Date: 11/12/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 10.4

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	55.4		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-1 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-203 Sample Matrix: Soil Moisture %: 18.0
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.37	10.2		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name:	Foster Wheeler Environmental Corp	Project No:	1990 023D	Collection Date:	11/12/2002
Project ID:	SWMU24	Service ID:	26068	Collected by:	
		Lab Sample ID:	02-6068-8	Received Date:	11/12/2002
Sample ID:	0023-SWMU24-204	Sample Matrix	Soil	Moisture %:	17.5
Sample Type:	Field Sample				

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	8.9		P		02M2324L	11/14/02	11/14/02	1	6010B

[illegible]

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-9 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-205 Sample Matrix: Soil Moisture %: 13 i
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.35	20.6		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-10 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-206 Sample Matrix: Soil Moisture %: 12.7
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.34	8.5		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02-6068-11 Received Date: 11/12/2002
Sample ID: 0023-SWMU24-207 Sample Matrix: Soil Moisture %: 15.8
Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	9.1		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

078817

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
 Project ID: SWMU24 Service ID: 26068 Collected by:
 Lab Sample ID: 02-6068-12 Received Date: 11/12/2002
 Sample ID: 0023-SWMU24-208 Sample Matrix: Soil Moisture %: 16.3
 Sample Type: Field Sample

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.36	14.5		P		02M2324L	11/14/02	11/14/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
 C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL) but greater than IDL
 Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
 W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
 M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

078818

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/14/2002
Project ID: SWMU24 Service ID: 26068 Collected by:
Lab Sample ID: 02M2324-MB-01 Received Date: 11/14/2002
Sample ID: 02M2324-MB-01 Sample Matrix: Soil Moisture %:
Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2324L	11/14/02	11/14/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
 Case No: SAS No: Service ID: 26068
 Project ID: SWMU24 Project No: 1990 023D Sample Matrix: Soil
 Batch No: 02M2324L
 MS Filename: - Date Analyzed: 111402 Time Analyzed: 12:28
 MSD Filename: - Date Analyzed: 111402 Time Analyzed: 12:30
 MS Sample No: 0023-SWMU24-203 Sample Lab ID: 02-6068-7 Moisture, % 18.0

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	183	10.2	183	94	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	183	185	96	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

078826

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 26068
Project ID: SWMU24 Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2324L
LCS Filename: - Date Analyzed: 111402 Time Analyzed: 12:16
LCSD Filename: - Date Analyzed: 111402 Time Analyzed: 12:18

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	148	99	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	ICSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	150	147	98	1	20	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

078823

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990.023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-6068
QA/QC LEVELS: EPA Level III / IV
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: *USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994*
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead

SDG NUMBER: 02-6068 (Level III / IV)

OVERVIEW

SAMPLES:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-197	02-6068-1	Soil	X
0023-SWMU24-198	02-6068-2	Soil	X
0023-SWMU24-199	02-6068-3	Soil	X
0023-SWMU24-200	02-6068-4	Soil	X
0023-SWMU24-201	02-6068-5	Soil	X
0023-SWMU24-202	02-6068-6	Soil	X
0023-SWMU24-203	02-6068-7	Soil	X
0023-SWMU24-204	02-6068-8	Soil	X
0023-SWMU24-205	02-6068-9	Soil	X
0023-SWMU24-206	02-6068-10	Soil	X
0023-SWMU24-207	02-6068-11	Soil	X
0023-SWMU24-208	02-6068-12	Soil	X
0023-SWMU24-203MD	02-6068-7MD	Soil	X
0023-SWMU24-203MS	02-6068-7MS	Soil	X
0023-SWMU24-203MSD	02-6068-7MSD	Soil	X

Note 1: Samples 0023-SWMU24-206 and 0023-SWMU24-207 were field duplicates

Note 2: Sample 0023-SWMU24-207 was validated at Level IV All other samples were validated at Level III

Suffix Code: MD = MATRIX DUPLICATE, MS = MATRIX SPIKE, MSD = MATRIX SPIKE
DUPLICATE

DATA REVIEWER(S): Marvin L Smith, Jean M Delashmit

RELEASE SIGNATURE:

A handwritten signature in dark ink, appearing to read "Mr. J. Delashmit", is written over the printed text "RELEASE SIGNATURE:". The signature is cursive and somewhat stylized.

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification
- U - The compound/analyte was analyzed for, but not detected. The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected. The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-6068 Lead

SAMPLES: 0023-SWMU24-197, 0023-SWMU24-198, 0023-SWMU24-199, 0023-SWMU24-200,
0023-SWMU24-201, 0023-SWMU24-202, 0023-SWMU24-203, 0023-SWMU24-204,
0023-SWMU24-205, 0023-SWMU24-206, 0023-SWMU24-207, 0023-SWMU24-208

LEAD

SUMMARY

I) General:

The analyses for Lead were performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

All CRDL criteria were met No action was required

III) Blanks

Lead was detected at very low levels (less than 0.005 mg/L) 0.002 mg/L in the continuing calibration blanks (CCBs) Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met No action was taken

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG All LCS Recovery criteria were met
No action was required

VII) Duplicate Sample Analysis (MD):

All Duplicate Sample criteria were met No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

All MS MSD criteria were met No action was required

IX) Field Duplicates:

One set of field duplicate samples (0023-SWMU24-206 ' 0023-SWMU24-207) was analyzed in this SDG The Relative Percent Difference (RPD) was:

<u>Analyte</u>	<u>0023-SWMU24-206</u>	<u>0023-SWMU24-207</u>	<u>RPD</u>
lead	8.5 mg/kg	9.1 mg/kg	6.8%

The RPD for lead was within the 60% QC limit for soil samples No action was necessary

X) Sample Result, Calculation/Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/12/2002
 Project ID: Naval Weapon Station Service ID: 26069 Collected by:
 Sample ID: 0023-SWMU24-209 Lab Sample ID: 02-6069-1 Received Date: 11/12/2002
 Sample Type: Field Sample Sample Matrix: Soil Moisture %: 13.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5.8	3.6	J	P		02M2323M	11/14/02	11/14/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.35	5.6		P		02M2323M	11/14/02	11/14/02	1	6010B
BARIUM	7440-39-3	mg/kg	1.2	188		P		02M2323M	11/14/02	11/14/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.23	<0.23	U	P		02M2323M	11/14/02	11/14/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.23	0.22	J	P		02M2323M	11/14/02	11/14/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.58	16.5		P		02M2323M	11/14/02	11/14/02	1	6010B
COBALT	7440-48-4	mg/kg	0.58	9.6		P		02M2323M	11/14/02	11/14/02	1	6010B
COPPER	7440-50-8	mg/kg	0.58	26.7		P		02M2323M	11/14/02	11/14/02	1	6010B
LEAD	7439-92-1	mg/kg	0.35	46.9		P		02M2323M	11/14/02	11/14/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.23	0.028	J	CV		02M2321H	11/13/02	11/13/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.23	<0.23	U	P		02M2323M	11/14/02	11/14/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.35	13.2		P		02M2323M	11/14/02	11/14/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.58	<0.58	U	P		02M2323M	11/14/02	11/14/02	1	6010B
SILVER	7440-22-4	mg/kg	0.58	<0.58	U	P		02M2323M	11/14/02	11/14/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.58	<0.58	U	P		02M2323M	11/14/02	11/14/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.58	35.2		P		02M2323M	11/14/02	11/14/02	1	6010B
ZINC	7440-66-6	mg/kg	0.58	159		P		02M2323M	11/14/02	11/14/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 26069
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2323M
MS Filename: - Date Analyzed: 111402 Time Analyzed: 17:26
MSD Filename: - Date Analyzed: 111402 Time Analyzed: 17:30
MS Sample No. 055SO002 Sample Lab ID: 02-6025-3 Moisture, % 6.6

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
ANTIMONY	mg/kg	26.8	0	24.6	92	75-125
ARSENIC	mg/kg	26.8	3.9	29.4	95	75-125
BARIUM	mg/kg	214	73.5	275	91	75-125
BERYLLIUM	mg/kg	10.7	0.019	10.2	95	75-125
CADMIUM	mg/kg	13.4	0.050	12.9	96	75-125
CHROMIUM	mg/kg	53.5	10.7	60.5	93	75-125
COBALT	mg/kg	53.5	2.8	53.0	91	75-125
COPPER	mg/kg	53.5	7.0	57.7	95	75-125
LEAD	mg/kg	161	2.5	153	93	75-125
MOLYBDENUM	mg/kg	107	1.0	103	95	75-125
NICKEL	mg/kg	53.5	4.0	53.5	93	75-125
SELENIUM	mg/kg	26.8	0.17	26.2	97	75-125
SILVER	mg/kg	53.5	4.2	55.0	95	75-125
THALLIUM	mg/kg	26.8	0	24.5	91	75-125
VANADIUM	mg/kg	107	16.0	116	93	75-125
ZINC	mg/kg	26.8	12.7	37.2	91	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	26.8	24.6	92	0	20	75-125
ARSENIC	mg/kg	26.8	29.3	95	0	20	75-125
BARIUM	mg/kg	214	277	95	1	20	75-125
BERYLLIUM	mg/kg	10.7	10.3	96	1	20	75-125
CADMIUM	mg/kg	13.4	13.0	97	1	20	75-125
CHROMIUM	mg/kg	53.5	60.7	93	0	20	75-125
COBALT	mg/kg	53.5	53.5	95	1	20	75-125
COPPER	mg/kg	53.5	58.4	96	1	20	75-125
LEAD	mg/kg	161	155	95	2	20	75-125
MOLYBDENUM	mg/kg	107	104	96	1	20	75-125
NICKEL	mg/kg	53.5	53.9	93	0	20	75-125
SELENIUM	mg/kg	26.8	25.9	96	1	20	75-125
SILVER	mg/kg	53.5	55.4	96	1	20	75-125
THALLIUM	mg/kg	26.8	21.3	91	0	20	75-125

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 26069
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2321H
MS Filename: - Date Analyzed: 111302 Time Analyzed: 15:12
MSD Filename: - Date Analyzed: 111302 Time Analyzed: 15:14
MS Sample No: 055SO001 Sample Lab ID 02-6025-2 Moisture, % 5.9

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
MERCURY	mg/kg	0.887	0.017	0.941	104	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
MERCURY	mg/kg	0.887	0.898	99	5	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/14/2002
 Project ID: Naval Weapon Station Service ID: 26069 Collected by:
 Lab Sample ID: 02M2323-MB-01 Received Date: 11/14/2002
 Sample ID: 02M2323-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
ANTIMONY	7440-36-0	mg/kg	5	< 5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
ARSENIC	7440-38-2	mg/kg	0.3	< 0.3	U	P		02M2323M	11/14/02	11/14/02	1	6010B
BARIUM	7440-39-3	mg/kg	1	< 1	U	P		02M2323M	11/14/02	11/14/02	1	6010B
BERYLLIUM	7440-41-7	mg/kg	0.2	< 0.2	U	P		02M2323M	11/14/02	11/14/02	1	6010B
CADMIUM	7440-43-9	mg/kg	0.2	< 0.2	U	P		02M2323M	11/14/02	11/14/02	1	6010B
CHROMIUM	7440-47-3	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
COBALT	7440-48-4	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
COPPER	7440-50-8	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2323M	11/14/02	11/14/02	1	6010B
MERCURY	7439-97-6	mg/kg	0.2	< 0.2	U	CV		02M2321H	11/13/02	11/13/02	1	7471A
MOLYBDENUM	7439-98-7	mg/kg	0.2	< 0.2	U	P		02M2323M	11/14/02	11/14/02	1	6010B
NICKEL	7440-02-0	mg/kg	0.3	< 0.3	U	P		02M2323M	11/14/02	11/14/02	1	6010B
SELENIUM	7782-49-2	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
SILVER	7440-22-4	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
THALLIUM	7440-28-0	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
VANADIUM	7440-62-2	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B
ZINC	7440-66-6	mg/kg	0.5	< 0.5	U	P		02M2323M	11/14/02	11/14/02	1	6010B

Not Detected is shown as PQL, with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 26069
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2323M
ICS Filename: - Date Analyzed: 111402 Time Analyzed: 17:07
ICSD Filename: - Date Analyzed: 111402 Time Analyzed: 17:11

Spiked Components	Unit	Spike Added	Concentration		ICS Rec% #	QC Limit, % REC
			Unspiked	LCS		
ANTIMONY	mg/kg	25	0	23.9	96	80-120
ARSENIC	mg/kg	25	0	25.0	100	80-120
BARIUM	mg/kg	200	0	207	104	80-120
BERYLLIUM	mg/kg	10	0	9.64	96	80-120
CADMIUM	mg/kg	12.5	0	12.8	102	80-120
CHROMIUM	mg/kg	50	0	51.3	103	80-120
COBALT	mg/kg	50	0	52.3	105	80-120
COPPER	mg/kg	50	0	49.6	99	80-120
LEAD	mg/kg	150	0	154	103	80-120
MOLYBDENUM	mg/kg	100	0	101	101	80-120
NICKEL	mg/kg	50	0	51.2	102	80-120
SELENIUM	mg/kg	25	0	25.2	101	80-120
SILVER	mg/kg	50	0	49.3	99	80-120
THALLIUM	mg/kg	25	0	26.0	104	80-120
VANADIUM	mg/kg	100	0	101	101	80-120
ZINC	mg/kg	25	0	27.3	109	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
ANTIMONY	mg/kg	25	23.9	96	0	20	80-120
ARSENIC	mg/kg	25	25.2	101	1	20	80-120
BARIUM	mg/kg	200	211	106	2	20	80-120
BERYLLIUM	mg/kg	10	9.90	99	3	20	80-120
CADMIUM	mg/kg	12.5	13.0	104	2	20	80-120
CHROMIUM	mg/kg	50	51.6	103	0	20	80-120
COBALT	mg/kg	50	53.0	106	1	20	80-120
COPPER	mg/kg	50	50.8	102	3	20	80-120
LEAD	mg/kg	150	158	105	2	20	80-120
MOLYBDENUM	mg/kg	100	104	104	3	20	80-120
NICKEL	mg/kg	50	53.0	106	4	20	80-120
SELENIUM	mg/kg	25	25.4	102	1	20	80-120
SILVER	mg/kg	50	49.9	100	1	20	80-120
THALLIUM	mg/kg	25	26.3	105	1	20	80-120

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
Case No: SAS No: Service ID: 26069
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2323M
LCS Filename: - Date Analyzed: 111402 Time Analyzed: 11:07
LCSD Filename: - Date Analyzed: 111402 Time Analyzed: 11:11

Continued

Batch No.: 02M2323M Method: 6010B Page: 2

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
VANADIUM	mg/kg	100	102	102	1	20	80-120
ZINC	mg/kg	25	27.9	112	3	20	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 7471A

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
Case No: SAS No: Service ID: 26069
Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
Batch No: 02M2321H
LCS Filename: - Date Analyzed: 111302 Time Analyzed: 15:03
LCSD Filename: - Date Analyzed: 111302 Time Analyzed: 15:05

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
MERCURY	mg/kg	0 833	0	0 839	101	80-120
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
MERCURY	mg/kg	0 833	0 841	101	0	20	80-120
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

White - Laboratory; Pink - Laboratory; Canary - Project File; Manila - Data Management

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/15/2002
Project ID: Naval Weapon Station Service ID: 26154 Collected by:
Sample ID: 0023-SWMU24-210 Lab Sample ID: 02-6154-1 Received Date: 11/15/2002
Sample Type: Field Sample Sample Matrix: Soil Moisture %: 4.8

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.32	21.0		P		02M2341L	11/18/02	11/18/02	1	6010B

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor
C Qualifier: U - Not Detected or less than IDL B - Less than RL (PQL, EQL or CRDL), but greater than IDL
Q Qualifier: N - Spike recovery out of control * - Duplicate analysis out of control
W - Post digestion spike for GFAA out of control E - Serial dilution difference out of control
M Qualifier: P - ICP A - FLAA F - GFAA CV - Cold Vapor

43006

Applied P & Ch Laboratory
Metal Analysis Results

Client Name: Foster Wheeler Environmental Corp Project No: 1990 023D Collection Date: 11/18/2002
 Project ID: Naval Weapon Station Service ID: 26154 Collected by:
 Lab Sample ID: 02M2341-MB-01 Received Date: 11/18/2002
 Sample ID: 02M2341-MB-01 Sample Matrix: Soil Moisture %:
 Sample Type: Method Blank

Element Name	CAS No	Unit	RL	Result	C	M	Q	Batch	D-Date	A-Date	DF	Method
LEAD	7439-92-1	mg/kg	0.3	< 0.3	U	P		02M2341L	11/18/02	11/18/02	1	6010B

Not Detected is shown as PQL with dilution and moisture corrected if applicable

Note: RL: PQL (EQL) or CRDL D-Date: Digestion Date; A-Date: Analysis Date; DF: Dilution Factor

C Qualifier: U - Not Detected or less than IDL

B - Less than RL (PQL, EQL or CRDL), but greater than IDL

Q Qualifier: N - Spike recovery out of control

* - Duplicate analysis out of control

W - Post digestion spike for GFAA out of control

E - Serial dilution difference out of control

M Qualifier: P - ICP

A - FLAA

F - GFAA

CV - Cold Vapor

FORM-5A Metal

Applied P & Ch Laboratory

Matrix Spike/Matrix Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCI
 Case No: SAS No: Service ID: 26154
 Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
 Batch No: 02M2341L
 MS Filename: - Date Analyzed: 111802 Time Analyzed: 14:32
 MSD Filename: - Date Analyzed: 111802 Time Analyzed: 14:34
 MS Sample No: HB1070 Sample Lab ID: 02-6153-2 Moisture, % 23.9

Spiked Components	Unit	Spike Added	Concentration		MS Rec% #	QC Limit, % REC
			Unspiked	MS		
LEAD	mg/kg	197	18	210	106	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	MSD Concentration	MSD Rec% #	RPD% #	QC Limit, %	
						RPD	REC
LEAD	mg/kg	197	215	108	2	20	15-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values.

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments:

000015

FORM-7 Metal

Applied P & Ch Laboratory

Lab Control Spike/Lab Control Spike Duplicate Recovery for Method 6010B

Client Name: Foster Wheeler Environmental Corp Contract No: Lab Code: APCL
 Case No: SAS No: Service ID: 26154
 Project ID: Naval Weapon Station Project No: 1990 023D Sample Matrix: Soil
 Batch No: 02M2341I
 LCS Filename: - Date Analyzed: 111802 Time Analyzed: 14:18
 LCSD Filename: - Date Analyzed: 111802 Time Analyzed: 14:20

Spiked Components	Unit	Spike Added	Concentration		LCS Rec% #	QC Limit, % REC
			Unspiked	LCS		
LEAD	mg/kg	150	0	148	99	75-125
# of Out-of-control					0	

Spiked Components	Unit	Spike Added	LCSD Concentration	LCSD Rec% #	RPD% #	QC Limit %	
						RPD	REC
LEAD	mg/kg	150	151	101	2	20	75-125
# of Out-of-control				0	0		

Column to be used to flag recovery and RPD values:

* - Values outside of contract required QC Limits

D - Spiked components diluted out

Comments: _____

000018

VALIDATA

Chemical Services, Inc.

4070 Balleycastle Lane, Duluth, GA 30097

DATA VALIDATION SUMMARY REPORT

COMPANY: Foster Wheeler Environmental Corp.
SITE NAME: Naval Weapon Station, Seal Beach, CTO-023
PROJECT NUMBER: 1990 023D
CONTRACTED LAB: Applied Physics and Chemistry Laboratory (APCL)
APCL PROJECT NUMBER: 02-6154
QA/QC LEVELS: EPA Level III
EPA SOW/METHODS: EPA 1990 SOW / SW-846
VALIDATION GUIDELINES: USEPA Contract Laboratory Program National Functional
Guidelines for Inorganic Data Review 1994
SAMPLE MATRIX: Soil
TYPE OF ANALYSIS: Lead
SDG NUMBER: 02-6154 (Level III)

OVERVIEW

SAMPLE:

<u>Client Sample #</u>	<u>Lab Sample #</u>	<u>Matrix</u>	<u>Lead</u>
0023-SWMU24-210	02-6154-1	Soil	X

DATA REVIEWER(S): Marvin L. Smith, Jean M. Delashmit

RELEASE SIGNATURE:

Data Qualifier Definitions

- I - The associated numerical value is an estimated quantity
- R - The data are unusable (the compound/analyte may or may not be present) Resampling and reanalysis are necessary for verification.
- U - The compound/analyte was analyzed for, but not detected The associated numerical value is the sample quantitation limit
- UI - The compound/analyte was analyzed for, but not detected The sample quantitation limit is an estimated quantity

Protocol Qualifier Classification: The data point was outside the analytical method, data validation guidelines or project specific limits.

Advisory Qualifier Classification: The data point was qualified based on professional judgement of the validator

Note: All qualifiers applied to the data in all analytical fractions are considered Protocol Qualifier Classification unless specifically noted as Advisory

DATA QUALIFICATION SUMMARY

Applied Physics and Chemistry Laboratory - 02-6154 Lead

SAMPLE: 0023-SWMU24-210

LEAD

SUMMARY

I) General:

The analysis for Lead was performed using Inductively Coupled Plasma Spectroscopy (ICP) and EPA Method 6010B

II.) Overall Assessment of Data:

All laboratory data were acceptable without qualification

MAJOR ISSUES

No major problems were observed in this SDG

MINOR ISSUES

I) Holding Times:

All Holding Time criteria were met. No action was taken

II) Calibration:

All Initial and Continuing Calibration criteria were met. No action was necessary

III) Contract Required Detection Limits Standard (CRDL):

All CRDL criteria were met. No action was required

III) Blanks:

Lead was detected at very low levels (less than 0.005 mg/L) 0.002 mg/L in the continuing calibration blanks (CCBs). Since all detections of lead in the SDG samples exceeded 5X the blank amounts, no action was required.

IV) ICP Interference Check Sample Results:

All ICP Interference Recovery criteria were met. No action was taken.

V) ICP Serial Dilution Analysis:

All Serial Dilution criteria were met No action was necessary

VI) Laboratory Control Samples (LCS):

Two LCS samples were analyzed by the laboratory in this SDG. All LCS Recovery criteria were met
No action was required

VII) Duplicate Sample Analysis (MD):

The MD sample was associated from SDG 02-6153 All MD criteria were met. No action was taken

VIII) Matrix Spike / Matrix Spike Duplicate (MS / MSD):

The MS / MSD samples were associated from SDG 02-6153 All MS / MSD criteria were met No
action was required

IX) Field Duplicates:

Field duplicate samples were not analyzed in this SDG No action was taken

X) Sample Result Calculation/Transcription Verification:

All criteria were met No action was taken

XI) System Performance:

All System Performance criteria were met No action was taken

XII) Quarterly Verification of Instrumental Parameters:

All criteria were met No action was taken

APPENDIX B

FIELD CHANGE REQUESTS

FOSTER WHEELER ENVIRONMENTAL CORPORATION
NAVY RAC PROJECT

CONTRACT NO N68711-98-D-5713
FIELD CHANGE REQUEST
(FCR)

CONTRACT TASK ORDER NAME SWDIV Contract No N68711-8-D-5713 SWMU 24 Naval Weapons Station Seal Beach, Seal Beach, CA	CTO # 0023	CHANGE REQUEST NO FCR-001
TO NAVY NTR/RPM/COTR Mr Si T Le (SWDIV RPM) Ms Pei-Fen Tamashiro (NAWWPNSTA Seal Beach Environmental Program Manager) Mr David Crawley (NAWWPNSTA Seal Beach ROICC)	LOCATION Naval Weapons Station Seal Beach Seal Beach California Solid Waste Management Unit 24	DATE November 4 2002

RE: ☒ Work Plan, CQC Plan, Sampling and Analysis Plan Title: SWMU 24

Other

1. DESCRIPTION (Items involved, submit sketch, if applicable):

The reason for the change is to remove Carl Jones from pages 5-9,6-2,6-3, Fig A.3-1, Fig B.2-1, Attachment 1 Appointment Letter and Resume and replace with Patrick Tinnies. The reason for the change is to remove Carl Jones from pages 5-9,6-2,6-3, Fig A.3-1, Fig B.2-1, Attachment 1 Appointment Letter and Resume and replace with Patrick Tinnies.

2. REASON FOR CHANGE

Carl Jones was not available for this project because of a prior commitment

3. RECOMMENDED DISPOSITION (Submit sketch, if applicable):

☒ Minor Change

☐ Major Change (Impacts Cost, Schedule or Technical)

3a Will this change result in a contract cost or time change? ☐ YES ☒ NO

3b Estimate of contract cost or time charge (if any)

PREPARED (Signature) <i>[Signature]</i>	DATE 11/4/02	PREPARED'S TITLE	SITE SUPERINTENDENT (Signature) <i>[Signature]</i>	DATE 11/4/02
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4. DISPOSITION

- ☐ Not approved (give reason)
- ☒ Considered minor change - approved per Recommended Disposition - Documents will not formally be revised field to maintain as-built records
- ☐ Considered major change - Navy approval required via contract modification process

1) FOSTER WHEELER ENVIRONMENTAL REGIONAL ENGINEER (Signature) (IF ENGINEERING RELATED)	DATE	2) FOSTER WHEELER ENVIRONMENTAL PROJECT MANAGER (Signature)	DATE 11/4/02
3) CIH (Signature) (IF HEALTH AND SAFETY RELATED) <i>[Signature]</i> Comments (attached) <input checked="" type="checkbox"/> No Comments	DATE 11-14-02	4) REGIONAL SCIENTIST (Signature) (IF SCIENCE RELATED)	DATE
5) QC PROGRAM MANAGER (Signature) <i>[Signature]</i> Comments (attached) <input checked="" type="checkbox"/> No Comments	DATE 11/18/02		

Project Manager distributes to:

CAM

QCM

FCR Preparer

Regional Engineer
Regional Scientist

Site Superintendent

CIH

REV 3-13-96

**FOSTER WHEELER ENVIRONMENTAL CORPORATION
NAVY RAC PROJECT**

CONTRACT NO. N68711-98-D-5713
**FIELD CHANGE REQUEST
(FCR)**

CONTRACT TASK ORDER NAME SWDIV Contract No. N68711-8-D-5713. SWMU 24 Naval Weapons Station Seal Beach, Seal Beach, CA	CTO # 0023	CHANGE REQUEST NO. FCR-002
TO NAVY NTR/RPM/COTR Mr Si T Le (SWDIV RPM) Ms Pei-Fen Tamashiro (NAVWPNSTA Seal Beach Environmental Program Manager) Mr. David Crawley (NAVWPNSTA Seal Beach ROICC)	LOCATION Naval Weapons Station Seal Beach Seal Beach, California Solid Waste Management Unit 24	DATE November 25 2002

RE: ☒ Work Plan Title: SWMU 24

Other _____

1. DESCRIPTION (Items involved, submit sketch, if applicable):
This FCR is in regards to Sect. 4.10 page 4.7 Backfill and Compaction. No import material will be brought in, the site will be graded using material from the site.

2 REASON FOR CHANGE
Navy requested

3 RECOMMENDED DISPOSITION (Submit sketch, if applicable):
☒ Minor Change ☐ Major Change (Impacts Cost, Schedule or Technical)

3a. Will this change result in a contract cost or time change? ☐ YES ☒ NO

3b. Estimate of contract cost or time charge (if any) _____

PREPARER (Signature) 	DATE 11/25/02	PREPARER'S TITLE PQCM	SITE SUPERINTENDENT (Signature) 	DATE 11/25/02
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4. DISPOSITION

☐ Not approved (give reason)

☒ Considered minor change - approved per Recommended Disposition - Documents will not formally be revised, field to maintain as-built records

☐ Considered major change - Navy approval required via contract modification process.

1) FOSTER WHEELER ENVIRONMENTAL REGIONAL ENGINEER (Signature) (IF ENGINEERING RELATED)	DATE	2) FOSTER WHEELER ENVIRONMENTAL PROJECT MANAGER (Signature) 	DATE 11/27/02
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3) CIH (Signature) (IF HEALTH AND SAFETY RELATED) Comments (attached) <input checked="" type="checkbox"/> No Comments	DATE 12/03/02	4) REGIONAL SCIENTIST (Signature) (IF SCIENCE RELATED) Comments (attached) <input type="checkbox"/> No Comments	DATE
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5) QC PROGRAM MANAGER (Signature) Comments (attached) <input checked="" type="checkbox"/> No Comments	DATE 12/13/02
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Project Manager distributes to:

CAM

Regional Engineer
Regional Scientist

QCM

Site Superintendent

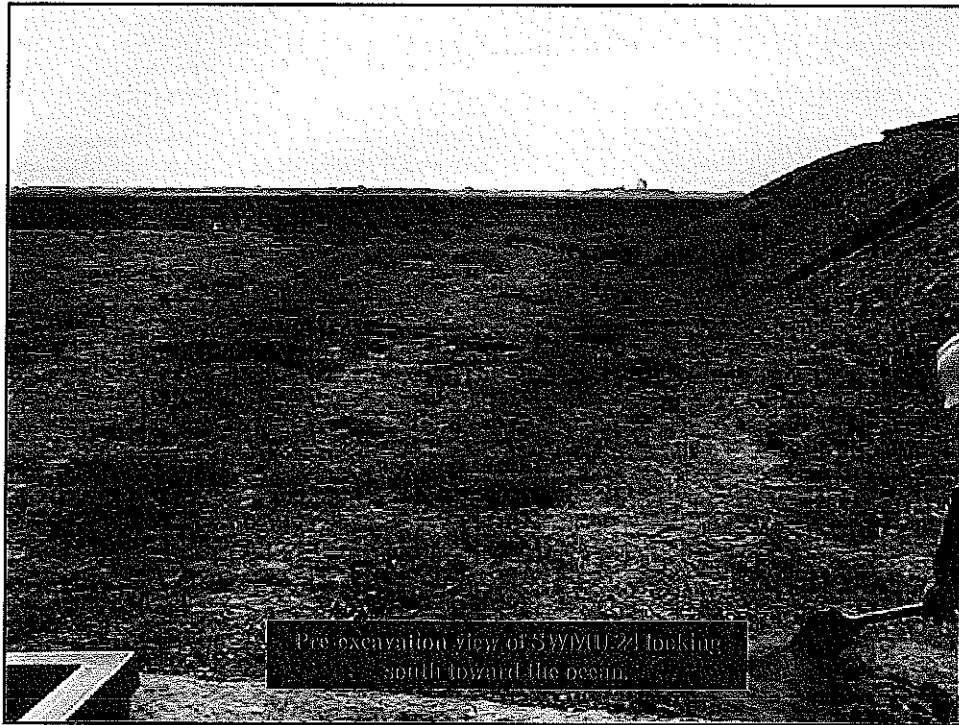
FCR Preparer

CIH

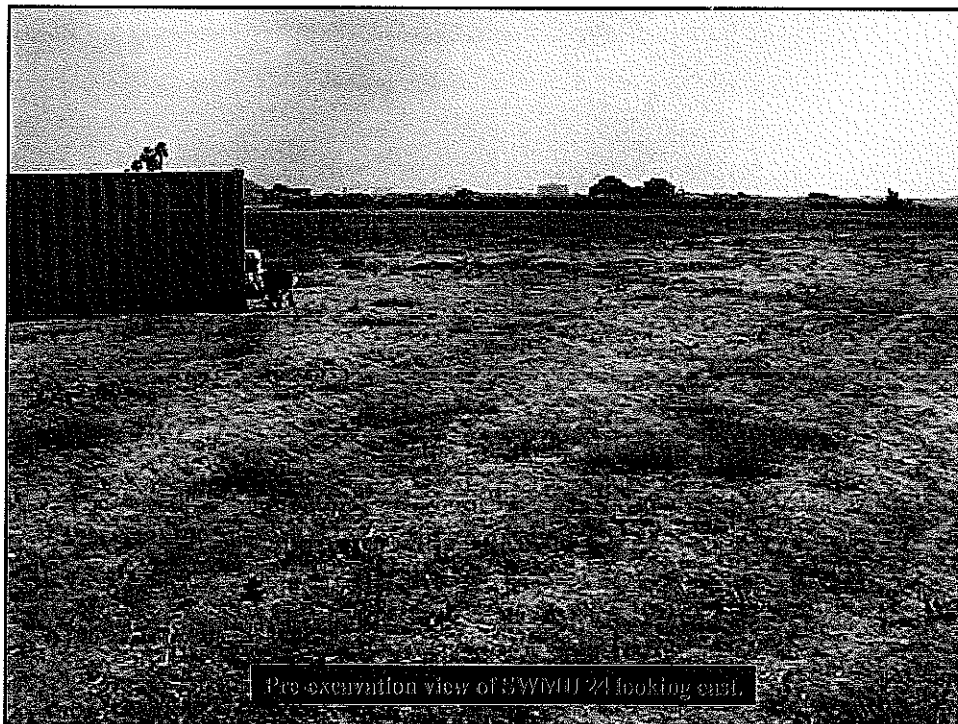
APPENDIX C

PHOTOGRAPHIC LOG

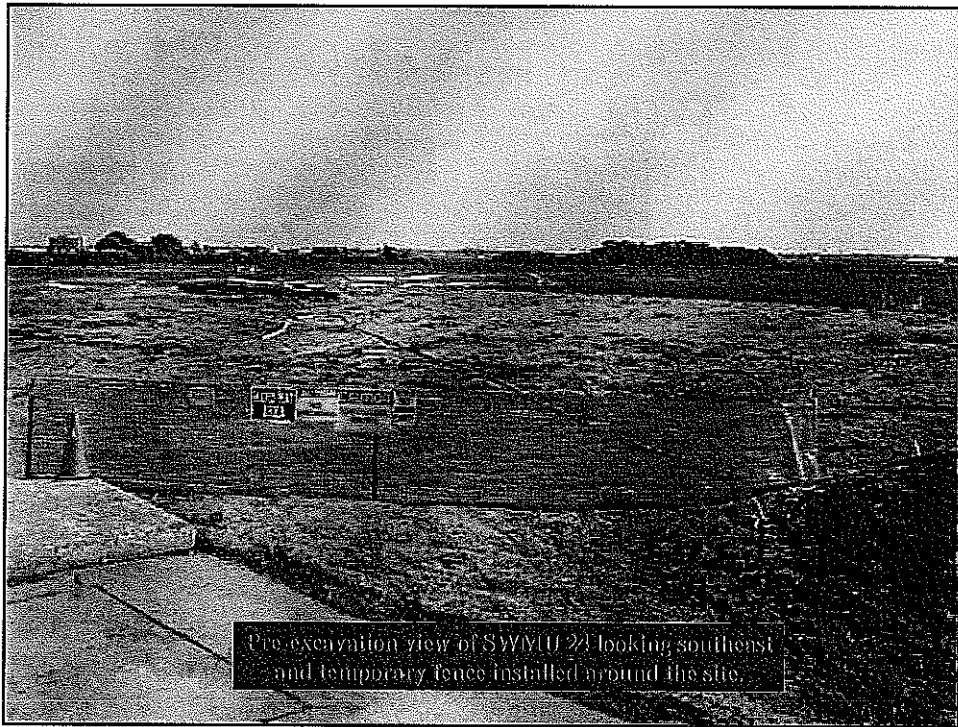
OF THE REMOVAL ACTIVITIES



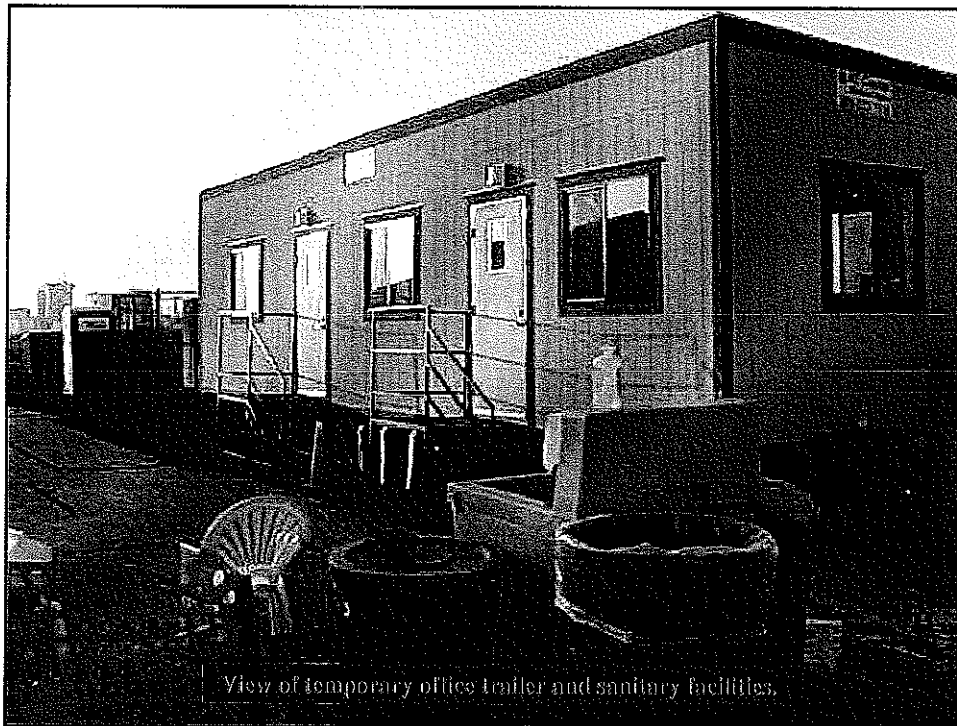
Pre excavation view of SYMUI 24 looking
south toward the ocean.



Pre excavation view of SYMUI 24 looking east.



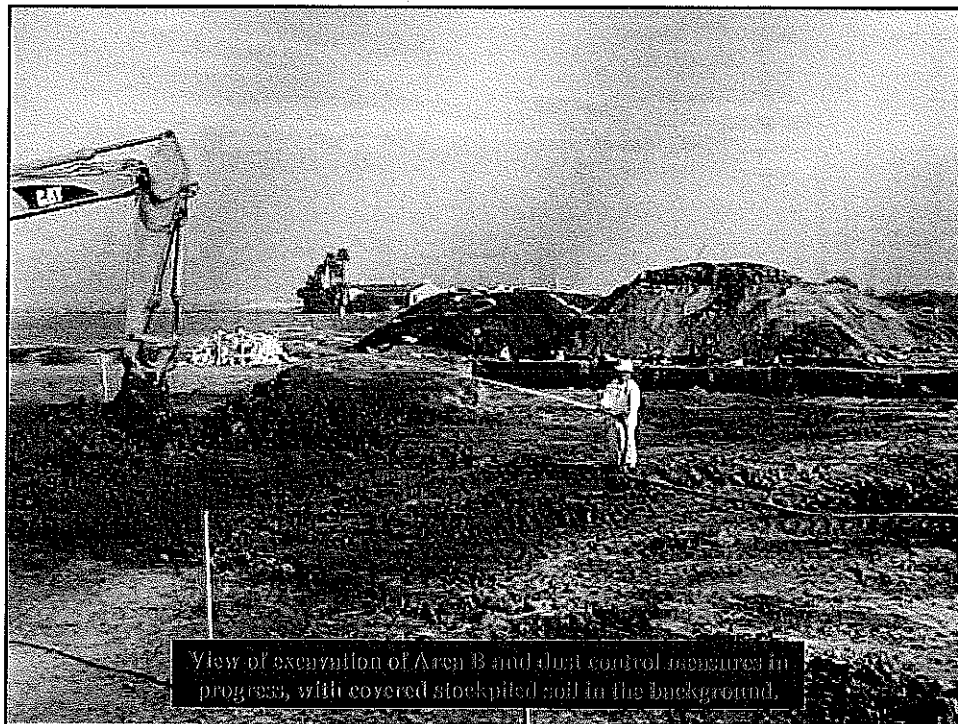
Pre-excavation view of SWYU 21 looking southeast and temporary fence installed around the site.



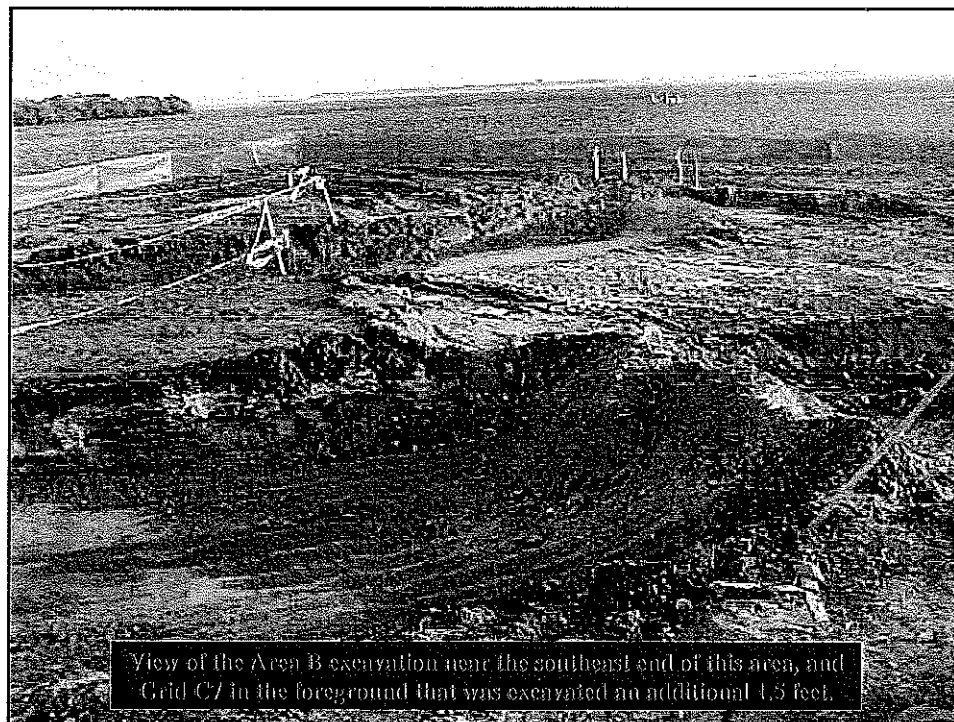
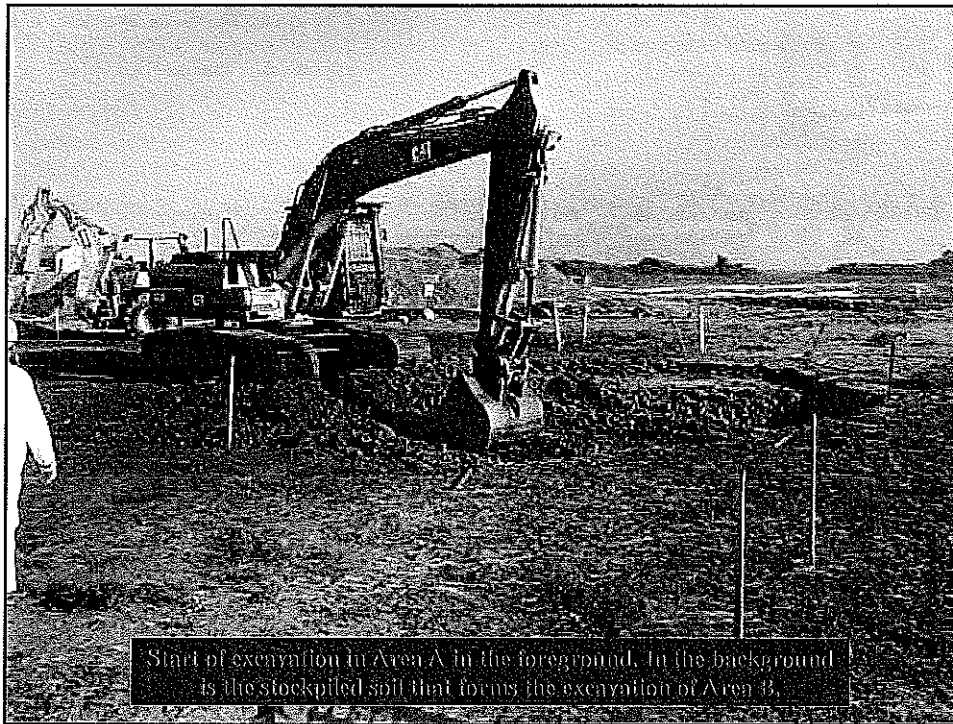
View of temporary office trailer and sanitary facilities.

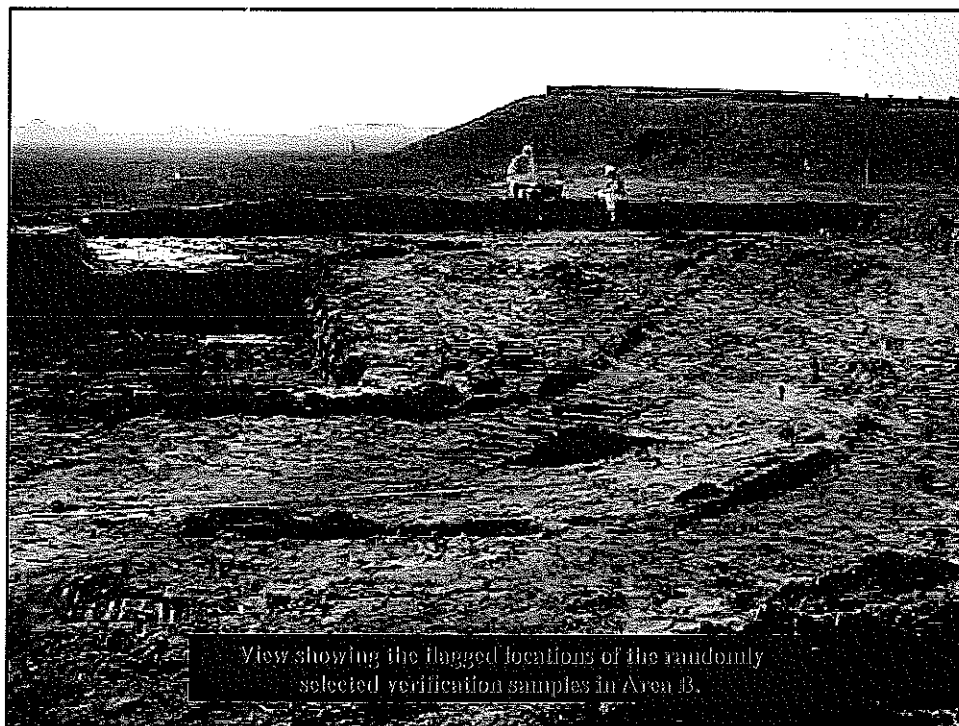
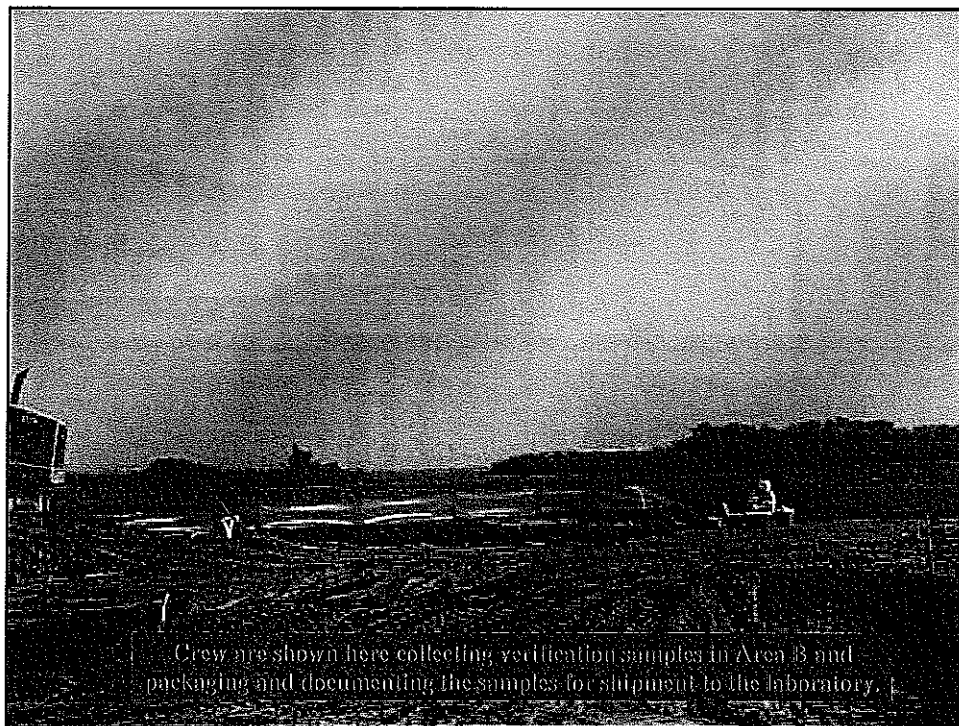


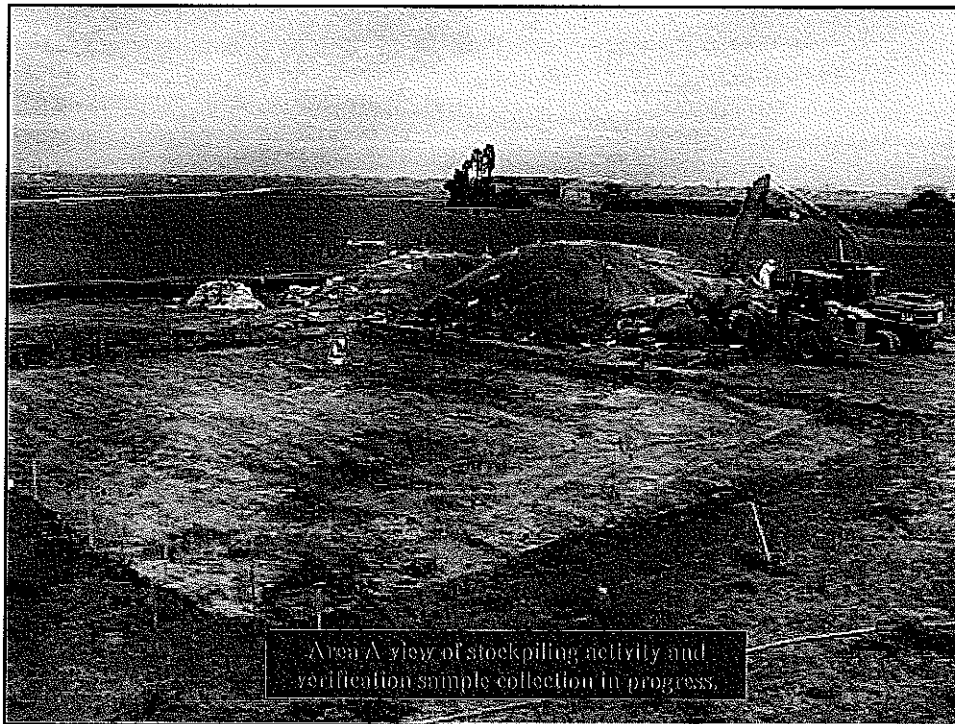
View of the partially excavated Area B.



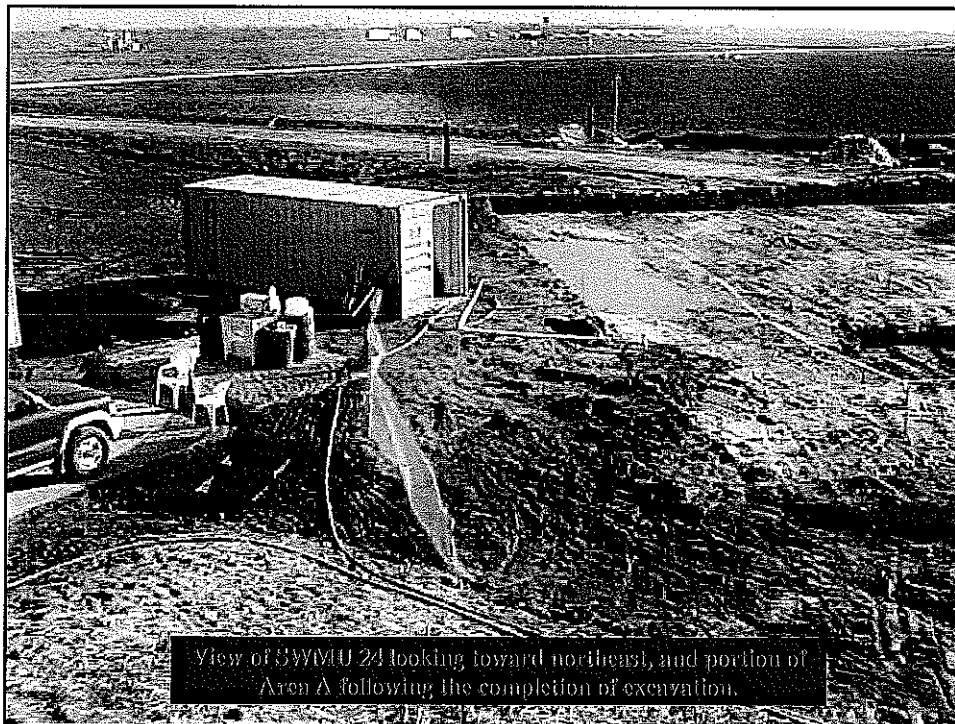
View of excavation of Area B and dust control measures in progress, with covered stockpiled soil in the background.



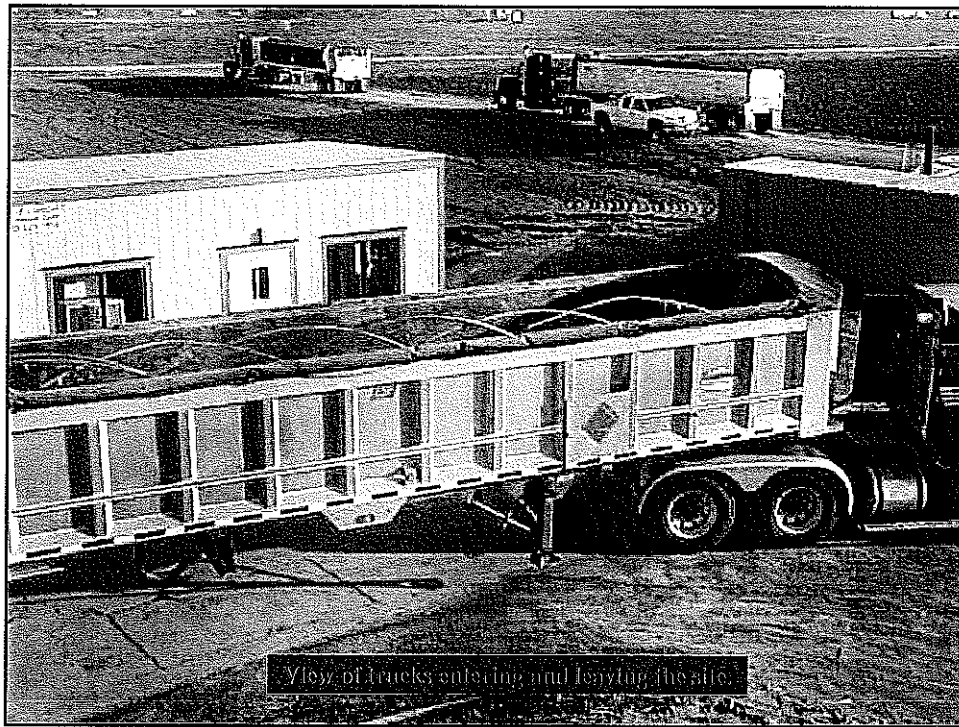




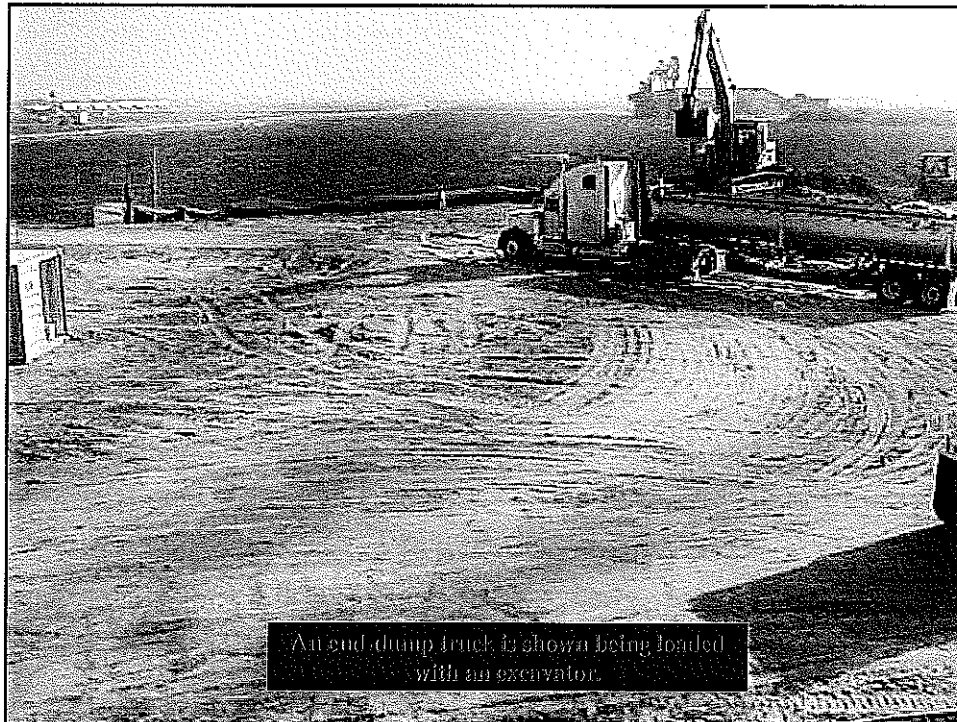
Area A view of stockpiling activity and verification sample collection in progress.



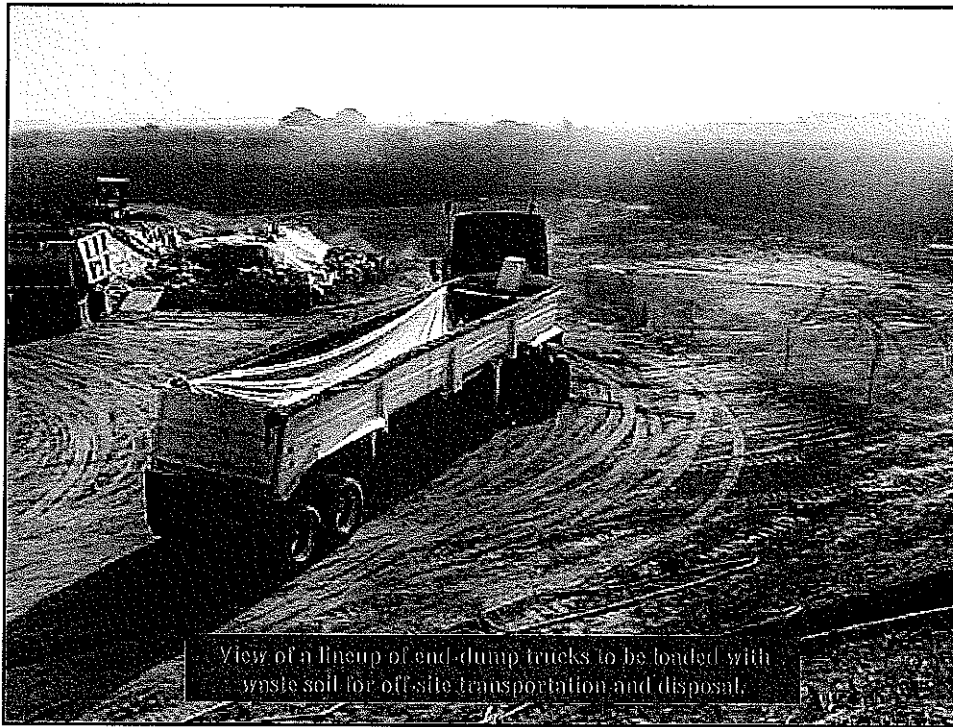
View of SWMU 24 looking toward northeast, and portion of Area A following the completion of excavation.



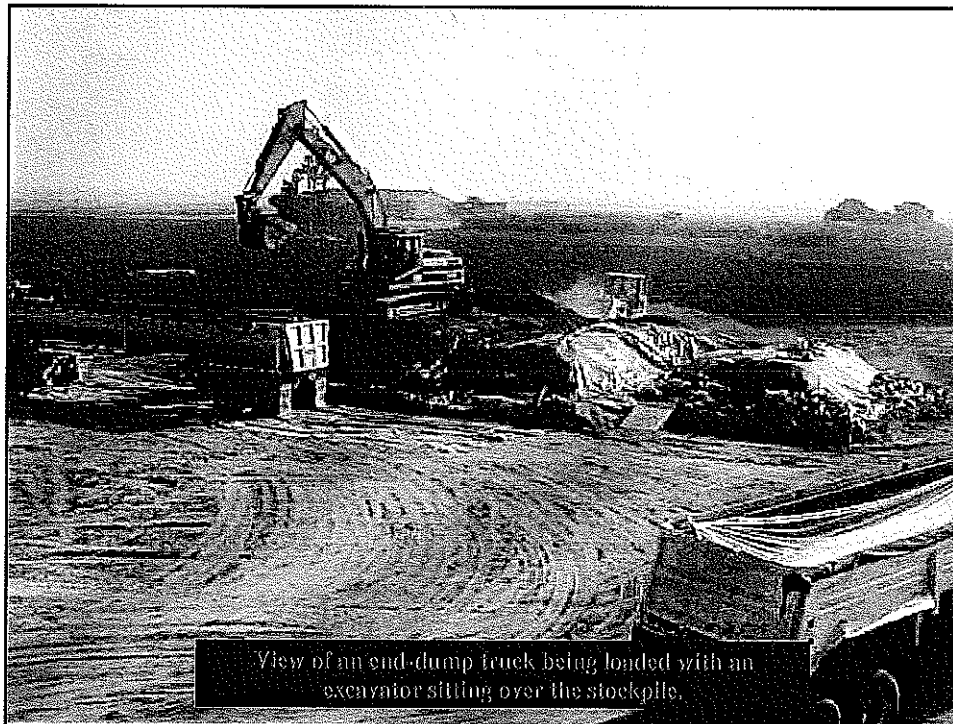
View of trucks entering and leaving the site.



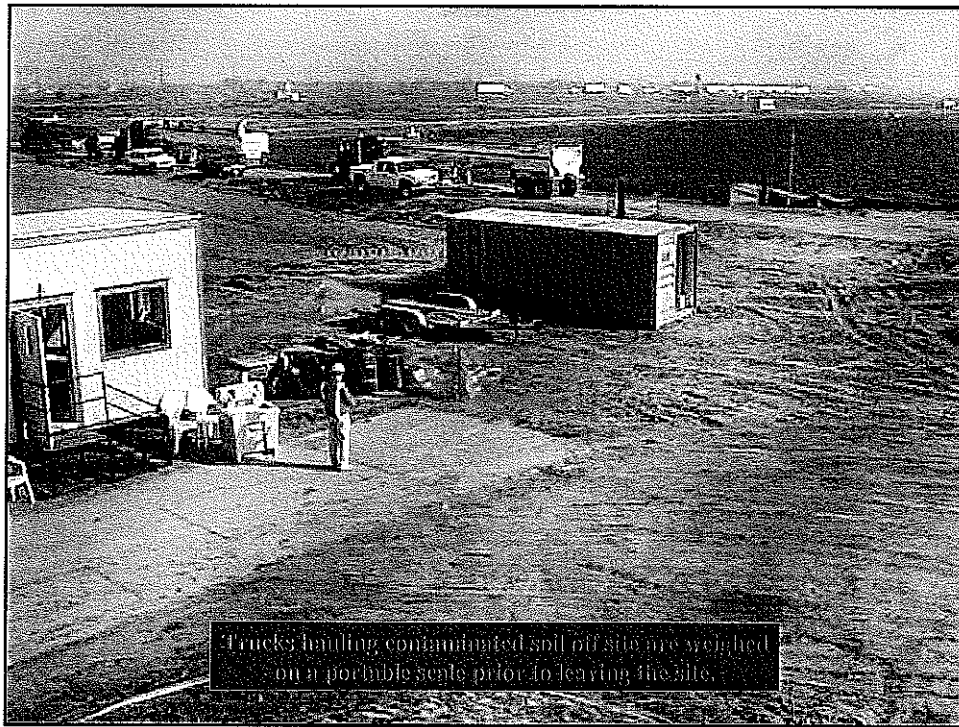
An end dump truck is shown being loaded with an excavator.



View of a lineup of end-dump trucks to be loaded with waste soil for off-site transportation and disposal.



View of an end-dump truck being loaded with an excavator sitting over the stockpile.



Trucks handling contaminated soil off site are weighed on a portable scale prior to leaving the site.



View of SWMU 24 looking toward the south and site grading activities in progress.

